Final Integrated Natural Resources Management Plan (INRMP) Alpena Combat Readiness Training Center Air National Guard

December 2018

Prepared for:

Air National Guard
3501 Fetchet Avenue
Joint Base Andrews, MD 20762

Michigan Air National Guard
Alpena Combat Readiness Training Center
5884 A Street
Alpena, MI 49707

Under Cooperative Agreement With:
Department of the Army
Corps of Engineers, Omaha District
1616 Capital Avenue
Omaha, NE 68102

Cooperative Agreement:
W9128F-16-2-0021-0008

Prepared by:

Texas A&M Natural Resources Institute
578 John Kimbrough Boulevard
2260 TAMU
College Station, TX 77843

SIGNATURE PAGE

The Alpena Combat Readiness Training Center (Alpena CRTC) Integrated Natural Resources Management Plan (INRMP) has been prepared for the Michigan Air National Guard (MIANG) facility, including its Geographically Separate Unit (GSU), located within Camp Grayling Joint Maneuver Training Center (hereafter Grayling GSU) to manage significant natural resources in support of the military mission. Significant natural resources include the presence of federal and state-listed protected species, and Waters of the US including wetlands. The Alpena CRTC INRMP meets the intent of the Sikes Act (16 USC § 670a–670l, 74 Stat. 1052).

To the extent that resources permit, the US Fish and Wildlife Service (USFWS), Michigan Department of Natural Resources (MDNR), and the MIANG by signature of their agency representative, do hereby enter into a cooperative agreement for the conservation, protection, and management of natural resources present on Alpena CRTC. This agreement may be modified and amended by mutual agreement of the authorized representatives of the 3 agencies. The agreement will become effective upon the date of the last signatory and shall continue in full force for a period of 5 years or until terminated by written notice to the other parties, in whole or in part, by any of the parties signing this agreement.

By their signatures below, or an enclosed letter of concurrence, all parties grant their concurrence with and acceptance of the following document.

Approving Officials:

John R. Miner, Colonel
Michigan Air National Guard
Commander

14 DEC 2018
Date

Scott Hicks
US Fish and Wildlife Service
Field Supervisor, Landing Field Office

12-21-2018
Date

Daniel Eichinger
Director
Michigan Department of Natural Resources

2/19/19
Date

MICHIGAN AIR NATIONAL GUARD
HEADQUARTERS ALPENA COMBAT READINESS TRAINING CENTER
5884 A. STREET
ALPENA, MI 49707-8125

December 10, 2019

MEMORANDUM FOR ALPENA CRTC/CEV

FROM: ALPENA CRTC/CEV
5884 A Street
Alpena CRTC, Alpena MI 49707

SUBJECT: FY2019 Integrated Natural Resources Management Plan Meeting with Agencies

REFERENCES: Alpena CRTC Integrated Natural Resources Management Plan, December 2019

1. **Agenda for Alpena CRTC Integrated Natural Resources Management Plan (INRMP) Meeting**
   a. Introductions/Attendance.
   b. Review of FY2019 projects and goals.
   c. Items from agencies, United States Fish and Wildlife Service (USFWS), The Michigan Department of Natural Resources (MDNR) and the United States Department of Agriculture – Wild Life Division (USDAWD).
   d. Closing.

2. **Introductions/Attendance**
   a. Present at the meeting: Lisa Kruse, Environmental Management (EM), Alpena CRTC; Jessica Pruden, Ecological Services, Lansing Field Office, USFWS; and Shelby Adams, Wildlife Biologist, Atlanta Field Office, MDNR.
   b. Not present at the meeting: NGB A4AM, Alpena CRTC Chief of Safety (for Bird Hazard Strike Hazard (BASH)) and USDAWD.

3. **Review of FY19 Projects and Goals**
   a. Over the spring and summer of 2019, Alpena CRTC had a flora and fauna survey completed to include threatened and endangered (T&E) species, bats and invasive species. Alpena CRTC has not received the final copy of the surveys but preliminary data did not identified any federally listed T&E species. The Blanding's Turtle, a state listed species of concern was identified at the Alpena CRTC. Once the final survey reports are received, the INRMP will be updated. Final reports can be provided to agencies before they are incorporated into the INRMP. The erosion and sediment

control study was finalized in January 2019. Funding has been approved for the erosion project but will depend on the status of the federal continuing resolution (CR). If the CR prohibits completing the erosion project in Fiscal Year (FY) 2020, it will be programmed for the following FY2021. A contract is in place to recertify/delineated Alpena CRTC's wetlands in the spring of 2020. The USDAWD has been investigating the perimeter fence for deficiencies and will continue in 2020. Two goals have been moved to FY2020, installation of the boat washing sign and the Best Management Practice (BMP) for the sand pile in the MOUT Area. Attachments 2 and 3 show the updated FY2019 and FY2020 Work Plans. Alpena CRTC also has a contract in place to have a storm water survey and water quality plan developed in the spring 2020.

4. **Items from Agencies**
   a. The USFWS had no additional comments to the INRMP except that if Alpena CRTC has any questions about species management or Section 7 consultation to please reach out to them. The MDNR had similar comments.

5. **Closing**
   a. Alpena CRTC EM offered a Base tour in the spring/summer.
   b. The INRMP meeting for FY2020 will take place in October 2020 to better accommodate everyone's schedule.

KRUSE.LISA.MARIE.1516064443 Digitally signed by KRUSE.LISA.MARIE.1516064443 Date: 2020.01.31 14:10:19 -05'00'

LISA KRUSE, MI ANG
State Environmental Quality Analyst

Attachments
1. INRMP FY19 Agency Signature Page
2. Email Correspondence about signatures
3. Updated Table 11 Work Plans FY 2019
4. Updated Table 12 Work Plans FY 2020

ANNUAL REVIEW DOCUMENTS

This page is used to certify the annual review and coordination of the Alpena CRTC INRMP.

With the signature below, this document acknowledges that the annual review and coordination of the INRMP has occurred for the specified year.

Year: 2019

[ ] MIANG Commander — Date: 31 JAN 2020

SCOTT HICKS Digitally signed by SCOTT HICKS Date: 2020.01.22 10:10:11 -05'00'

[ ] US Fish and Wildlife Service — Date

Shelby Adams — 1/21/19

[ ] Michigan Department of Natural Resources — Date

From:	Adams, Shelby (DNR)
To:	Kruse, Lisa M NFG NG MIANG (USA); Pruden, Jessica A; "Scott_Hicks@fws.gov"
Subject:	[Non-DoD Source] RE: Alpena CRTC INRMP Meeting Minutes - Signature Request
Date:	Tuesday, January 21, 2020 10:55:27 AM
Attachments:	Alpena CRTC INRMP Meeting FY2019 SIGNED (003).pdf

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In case you didn't get my first signature

Shelby Adams
Wildlife Biologist – Michigan DNR
989-785-4251 ext. 5230

From: Kruse, Lisa M NFG NG MIANG (USA) <lisa.m.kruse8.nfg@mail.mil>
Sent: Tuesday, January 21, 2020 8:50 AM
To: Adams, Shelby (DNR) <AdamsS25@michigan.gov>; Pruden, Jessica A <jessica_pruden@fws.gov>; 'Scott_Hicks@fws.gov' <Scott_Hicks@fws.gov>
Subject: RE: Alpena CRTC INRMP Meeting Minutes - Signature Request

Here is the attachment again, just in case.

Lisa Kruse
State Environmental Quality Analyst
MI ANG-Alpena CRTC
5884 A Street
Alpena, MI 49707
Phone: 989-354-6278
DSN: 741-6278
Email: lisa.m.kruse8.nfg@mail.mil < Caution-mailto:lisa.m.kruse8.nfg@mail.mil >

Alpena CRTC VEMO Site: Caution-https://intelshare.intelink.gov/sites/vemo/alpena/ < Caution-https://intelshare.intelink.gov/sites/vemo/alpena/ >

From: Kruse, Lisa M NFG NG MIANG (USA)
Sent: Tuesday, January 21, 2020 8:49 AM
To: 'Adams, Shelby (DNR)' <AdamsS25@michigan.gov < Caution-mailto:AdamsS25@michigan.gov > >; 'Pruden, Jessica' <jessica_pruden@fws.gov < Caution-mailto:jessica_pruden@fws.gov > >; 'Scott_Hicks@fws.gov' <Scott_Hicks@fws.gov < Caution-mailto:Scott_Hicks@fws.gov > >
Subject: RE: Alpena CRTC INRMP Meeting Minutes - Signature Request

Importance: High

All,

Thank you all again for taking time out of your schedules to discuss Alpena CRTC's INRMP. I'm following up to close the loop on the required signature page.

Jessica- Can you sign (on page 3) for the USFWS and have it back to me by Friday so Then Shelby can sign for the MDNR? Digital signature is good or wet signature if that doesn't work.

Thank you in advance.

Lisa Kruse
State Environmental Quality Analyst
MI ANG-Alpena CRTC
5884 A Street
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Phone: 989-354-6278
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Alpena CRTC VEMO Site: Caution-https://intelshare.intelink.gov/sites/vemo/alpena/ < Caution-https://intelshare.intelink.gov/sites/vemo/alpena/ >

From: Kruse, Lisa M NFG NG MIANG (USA)
Sent: Tuesday, December 10, 2019 9:24 AM
To: Adams, Shelby (DNR) <AdamsS25@michigan.gov < Caution-mailto:AdamsS25@michigan.gov > >; Pruden, Jessica <jessica_pruden@fws.gov < Caution-mailto:jessica_pruden@fws.gov > >;Scott_Hicks@fws.gov < Caution-mailto:Scott_Hicks@fws.gov >
Subject: Alpena CRTC INRMP Meeting Minutes - Signature Request

ALCON,

Even though there was some technical difficulties, I thank you for taking the time to discuss Alpena CRTC's INRMP. Attached are the meeting minutes. I request that the USFWS signs first, then the MDNR. Digital is preferred but wet signature works too. I'm looking to have all signatures before the end of the year. Thank you again!

V/R,

Lisa Kruse
State Environmental Quality Analyst
MI ANG-Alpena CRTC
5884 A Street
Alpena, MI 49707

Phone: 989-354-6278
DSN: 741-6278
Email: lisa.m.kruse8.nfg@mail.mil < Caution-mailto:lisa.m.kruse8.nfg@mail.mil >

Alpena CRTC VEMO Site: Caution-https://intelshare.intelink.gov/sites/vemo/alpena/ < Caution-https://intelshare.intelink.gov/sites/vemo/alpena/ >

Table 11. Work Plans FY 2019		
Projects	**Completed (Date)**	**Priority Level**
Prepare budget to implement INRMP.	**1 Oct 2019**	**High**
Complete annual review of INRMP with stakeholders.	**11 Dec 2019**	**High**
Complete erosion and sediment control study.	**Jan 2019**	**High**
Update invasive species survey.	**In progress – survey done, waiting on report**	**High**
Update flora and fauna survey.	**In progress – survey done, waiting on report**	**High**
Update wildlife surveys to include T&E species and bats.	**In progress – survey done, waiting on report**	**High**
Recertify wetland jurisdiction delineation.	**Spring 2020**	**High**
Make "wash your boat signs" at the boat launch and for services. Ensure that all equipment used in water is clean before entering the water and clean when leaving the water to prevent the spread of invasive aquatic species.	**Moved to FY2020**	**High**
Investigate perimeter fence deficiencies.	**In progress - USDAWD**	**High**
Investigate BMP for sand pile in the MOUT Area.	**Moved to FY2020**	**Medium**
Consider natural resources (T&E, wetlands, storm water, soil erosion, etc.) during planning and evaluate impacts.		High
Continue to manage and monitor soil erosion impacts on Thunder Bay River.		High
Monitor forest stands for disease and to minimize impacts to migratory birds and roosting bats.		High
Use native plant species and materials for landscaping activities.		High
Provide environmental and natural resources information VIA E-CFT, ESOHC, training sessions and/or newsletters.		Medium
Continue to monitoring for invasive species.		Medium
Continue supporting IPMP.		Medium
Continue supporting BASH risk reduction measures modifying management strategies if BASH risk increases and/or high BASH risk species increase. MICRTC/CEV will participate in the BHWG.		Medium

Updated 10 December 2019

Table 12. Work Plans FY 2020		
Projects	**Completed (Date)**	**Priority Level**
Prepare budget to implement INRMP.	**1 Oct 2020**	**High**
Complete annual review of INRMP with stakeholders.		**High**
Investigate perimeter fence deficiencies.		**High**
Implement/Program soil erosion project from soil erosion study.		**High**
Investigate BMP for sand pile in the MOUT Area.		**Medium**
Make "wash your boat signs" at the boat launch and for services. Ensure that all equipment used in water is clean before entering the water and clean when leaving the water to prevent the spread of invasive aquatic species.		**High**
Recertify wetland jurisdiction delineation.		**High**
Consider natural resources (T&E, wetlands, storm water, soil erosion, etc.) during planning and evaluate impacts.		High
Continue to manage and monitor soil erosion impacts on Thunder Bay River.		High
Monitor forest stands for disease to minimize impacts to migratory birds and roosting bats.		High
Use native plant species and materials for landscaping activities.		High
Provide environmental and natural resources information VIA E-CFT, ESOHC, training sessions and/or newsletters.		Medium
Continue to monitor for invasive species.		Medium
Continue supporting IPMP.		Medium
Continue supporting BASH risk reduction measures modifying management strategies if BASH risk increases and/or high BASH risk species increase. MICRTC/CEV will participate in the BHWG.		Medium

Updated 10 December 2019

ANNUAL REVIEW DOCUMENTS

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Year: 2020

[ ]	Date
MIANG Commander	
[ ]	Date
US Fish and Wildlife Service	
[ ]	Date
Michigan Department of Natural Resources	

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Year: 2021

[ ]	Date
MIANG Commander	
[ ]	Date
US Fish and Wildlife Service	
[ ]	Date
Michigan Department of Natural Resources	

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Year: 2022

[ ]	Date
MIANG Commander	
[ ]	Date
US Fish and Wildlife Service	
[ ]	Date
Michigan Department of Natural Resources	

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DOCUMENT CONTROL

Record of Review –In accordance with the Sikes Act, Department of Defense Instruction (DoDI) 4715.03, *Natural Resources Conservation Program*, Department of Defense Manual (DoDM) 4715.03, *INRMP Implementation Manual*, and Air Force Instruction (AFI) 32-7064, *Natural Resources Management*, an INRMP is required to be reviewed annually to ensure plans and projects remain current, and every 5 years for operation and effect. Annual reviews and updates are accomplished through annual meetings led by the base Environmental Manager (EM) and attended by the USFWS, the State Fish and Wildlife Agency, and, if required, the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA NMFS). During the annual meetings, the actions taken over the previous year are discussed and actions to be taken over the coming year are discussed and agreed to. The meeting is followed up in writing for concurrence by the EM and the representatives from the USFWS and the state fish and wildlife agency, MDNR. As part of the annual and 5-year reviews, the EM shall hold meetings with internal stakeholders to ensure all personnel and tenants are informed of INRMP requirements.

ACRONYMS

°F	Degrees Fahrenheit
AFI	Air Force Instruction
ANG	Air National Guard
ANGRC	Air National Guard Readiness Center
AOA	Airport Operating Area
AOB	Airfield Operations Board
APN	Alpena County Regional Airport
ATC	Air Traffic Control
BASH	Bird/Wildlife Aircraft Strike Hazard
BCI	Bat Conservation International
BGEPA	Bald and Golden Eagle Protection Act
BHWG	Bird Hazard Working Group
BMP	Best Management Practice
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CRTC	Combat Readiness Training Center
CWA	Clean Water Act
DEPARC	Defense Environmental Programs Annual Report to Congress
DoD	Department of Defense
DoDI	Department of Defense Instruction
DoDM	Department of Defense Manual
EA	Environmental Assessment
E-CFT	Environmental Cross Functional Team
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
ESOHC	Environmental, Safety, and Occupational Health Council
FEMA	Federal Emergency Management Agency
FY	Fiscal year
GIS	Geographic Information System
GSU	Geographically Separate Unit
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
INRMP	Integrated Natural Resources Management Plan
IPM	Integrated Pest Management
MBTA	Migratory Bird Treaty Act
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
MESA	Endangered Species Act of the State of Michigan
MIANG	Michigan Air National Guard
MICRTC/CEV	Environmental Management Office

MiRAM	Michigan Rapid Assessment Method for Wetlands
MISIN	Michigan Invasive Species Information Network
MNFI	Michigan Natural Features Inventory
MOA	Memorandums of Agreement
MOU	Memorandums of Understanding
MOUT	Military Operation in Urban Terrain
MSL	Mean sea level
NAAQS	National Ambient Air Quality Standards
NEMCOG	Northeast Michigan Council of Governments
NEPA	National Environmental Policy Act
NGB	National Guard Bureau
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resources Conservation Service
NREPA	Natural Resources and Environmental Protection Act
NWS	National Weather Service
OPR	Office of Primary Responsibility
ORV	Off-road vehicle
PFC	Perfluorinated Compounds
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonate
RMZ	Riparian Management Zones
SGCN	Species of Greatest Conservation Need
SWPPP	Storm Water Pollution Prevention Plan
USACE	US Army Corps of Engineers
USAF	United States Air Force
USC	United States Code
USDA-WS	United States Department of Agriculture – Wildlife Services
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WDNR	Wisconsin Department of Natural Resources
WHMP	Wildlife Hazard Management Plan

1.0 EXECUTIVE SUMMARY

The Sikes Act Improvement Act of 1997, 16 US Code (USC) § 670a et seq., as amended, (herein referred to as the Sikes Act) requires federal military installations with significant natural resources to develop a long-range INRMP and implement cooperative agreements with other agencies. The Sikes Act is implemented through Department of Defense (DoD) and US Air Force (USAF) Instructions and Manuals. The conservation measures discussed in the INRMP help manage water resources, reduce bird/wildlife aircraft strike hazard (BASH) risk, manage federal and state-listed species, and sustain natural resources. The Alpena CRTC INRMP is intended to be in support of and consistent with the intent of the Sikes Act.

The Alpena CRTC INRMP is the primary guidance document and tool for managing natural resources at Alpena CRTC. Alpena CRTC is comprised of approximately 630 acres over 2 parcels, all owned by Alpena County in Michigan. Alpena CRTC also manages the Grayling GSU which occupies approximately 16 acres, in Ostego County, Michigan. Due to the size of the Grayling GSU, most discussions of natural resources will focus on Alpena CRTC. All facilities are ultimately under the command of the MIANG with the primary purpose to provide support, facilities, instruction, and airspace for military and civilian training in support of the military mission and civilian authorities. Alpena CRTC, due to its geographic location and the nature of the facility, contains diverse habitats and species that require natural resources management. The natural resources management on Alpena CRTC is conducted in a way that provides for sustainable land use, complies with applicable environmental laws and regulations, real estate leases and licenses, and provides for no net loss in the capability to support the military mission. This INRMP provides a structure and plan to manage natural resources more effectively and ensure that MIANG facilities remain available to support the installation's military mission into the future.

Specific goals in the Alpena CRTC INRMP are supported by its objectives and work plans, as well as management strategies and specific actions. Goals and objectives are listed in **Section 8**, and projects and activities are summarized in the annual work plans in **Section 9**. The Alpena CRTC INRMP provides a description of the installation, the military mission, the environment on the installation, and specific plans and strategies for natural resource management designed for sustainable military training. The implementation of the Alpena CRTC INRMP will ensure the successful accomplishment of the military mission while promoting adaptive management that sustains ecosystem and biological integrity, and provides for multiple uses of natural resources. It also will ensure that management efforts of the MIANG at these facilities is consistent and integrated with as little redundancy as possible.

2.0 GENERAL INFORMATION

2.1 Purpose and Scope

The Alpena CRTC INRMP is the primary guidance document and tool for natural resource management that provides for sustainable, healthy ecosystems, complies with applicable environmental laws and regulations, real estate leases and licenses, and provides for "no net

loss" in the capability of installation lands to support the military mission of the installation. The installation Commander can use this INRMP to manage natural resources more effectively to ensure that installation lands remain available and in good condition to support the installation's military mission over the long term.

The Alpena CRTC INRMP is consistent with the Sikes Act as required by the DoD, the Air Force, and the National Guard Bureau (NGB). It was developed as a result of the presence of federal and state-listed endangered and threatened species, and regulated water resources on Alpena CRTC. A multiple-use approach is implemented to allow for the presence of mission-oriented activities, as well as protecting environmental quality through the efficient management of natural resources.

2.2 Management Philosophy

2.2.1 Ecosystem Management

Natural resources at Alpena CRTC and Grayling GSU are managed with an ecosystem management approach as directed by AFI 32-7064 and DoDI 4715.03. Ecosystem management is defined as management to conserve major ecological services and restore natural resources while meeting the socioeconomic, political, and cultural needs of current and future generations. The goal of ecosystem management on military lands is to ensure that military lands support present and future test and training requirements while conserving, improving, and enhancing ecosystem integrity. The ecosystem management program for Alpena CRTC incorporates these elements described in **Table 1**.

Biodiversity is the degree of variation of life within a given ecosystem, region, or even the entire planet. The DoD's challenge is to manage for biodiversity in a way that supports the military mission. Specific management practices identified in the Alpena CRTC INRMP have been developed to enhance and maintain biological diversity within Alpena CRTC ecosystems. Ecosystem management includes biodiversity conservation and invasive species control as integral parts of ecosystem management. Air National Guard (ANG) installations maintain or reestablish viable populations of all native species when practical and consistent with the military mission. ANG installations also identify the presence of exotic and invasive species and implement programs to control and/or eradicate those species. Finally, when feasible, ANG installations develop joint control strategies with other federal, state, and local cooperating agencies and adjacent landowners to increase the effectiveness of control measures and for the benefits illustrated in **Figure 1**.

Table 1. Elements and Principles of Ecosystem Management	
DoDI 4715.03 Elements	
1	Avoid single-species management and implement an ecosystem-based multiple species management approach, insofar as that is consistent with the requirements of the ESA
2	Use an adaptive management approach to manage natural resources such as climate change
3	Evaluate and engage in the formation of local or regional partnerships that benefit the goals and objectives of the INRMP
4	Use the best available scientific information in decision-making and adaptive management techniques in natural resource management
5	Foster long-term sustainability of ecosystem services
AFI 32-7064 Principles	
1	Maintain or restore native ecosystem types across their natural range
2	Maintain or restore ecological processes such as wildland fire and other disturbance regimes where practical and consistent with the military mission
3	Maintain or restore the hydrological processes in streams, floodplains, and wetlands when feasible
4	Use regional approaches to implement ecosystem management on an installation by collaboration with other DoD components as well as other federal, state, and local agencies, and adjoining property owners
5	Provide for outdoor recreation, agricultural production, harvesting of forest products, and other practical utilization of the land and its resources, provided that such use does not inflict long-term ecosystem damage or negatively impact the ANG mission

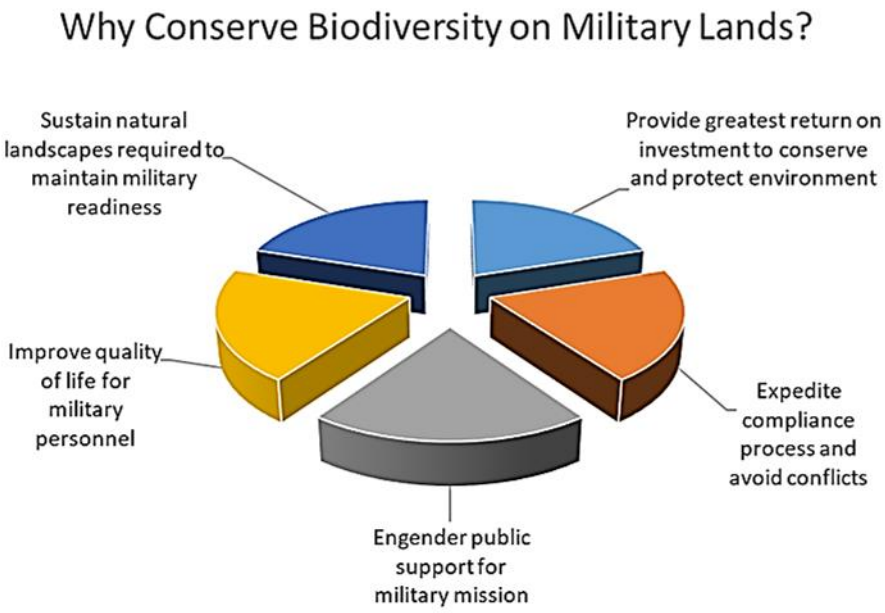


Figure 1. Why conserve biodiversity on Military Lands
**Adapted from Keystone Center, 1996.*

2.3 Authority

2.3.1 Natural Resources Law, Regulations & Policy

The ANG, USFWS, and MDNR determined an INRMP was required for Alpena CRTC due to the presence of significant natural resources thereby necessitating conservation and management.

DoDI 4715.03, *Natural Resources Conservation Program*, identifies the DoD policies and procedures concerning natural resources management and INRMP reviews, public comment, and endangered species consultation. INRMPs are required to be jointly reviewed by the USFWS, state fish and wildlife agency, and ANG installation for operation and effect on a regular basis, but not less often than every 5 years. Minor updates and continued implementation of an existing INRMP do not require need for public comment. Major revisions to an INRMP do require an opportunity for public review. The degree of endangered species consultation when updating or revising an INRMP depends upon specific projects identified in the INRMP and the amount of past consultation. Most updates and revisions will not require formal consultation. Endangered Species Act (ESA) Section 7 consultation is required for INRMPs that contain projects that may affect federally-listed species or designated critical habitat. The need for such consultation should become apparent during the review for operation and effect and implemented if necessary as part of an INRMP revision.

2.3.2 National Environmental Policy Act Compliance

The Environmental Impact Analysis Process (EIAP) is the process by which federal agencies facilitate compliance with environmental regulations. The primary legislation affecting these agencies' decision-making process is the National Environmental Policy Act of 1969 (NEPA; 42 USC § 4321 *et seq*.). NEPA requires that any organization using federal monies, proposing work on federal lands, or requiring a federal permit consider potential environmental consequences of proposed actions. The law's intent is to protect, restore, or enhance the environment through well-informed decisions.

The Council on Environmental Quality (CEQ) was established under NEPA for the purpose of implementing and overseeing federal policies as they relate to this process. The adoption of an INRMP can be considered a major federal action as defined by Section 1508.18 of the CEQ regulations. This requires an analysis of potential environmental impacts for the implementation of an INRMP, although a complete Environmental Assessment (EA) is not necessarily required as individual actions and projects undergo their own NEPA analysis.

CEQ regulations require intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) process, Alpena CRTC notifies relevant federal, state, and local agencies and allows them sufficient time to make known their environmental concerns specific to a Proposed Action. Comments and concerns submitted by these agencies during the IICEP process are subsequently incorporated into the analysis of potential environmental impacts. This coordination fulfills requirements under Executive Order (EO) 12372, Intergovernmental Review of Federal Programs, and AFI 32- 7061, *Environmental Impact Analysis Process*. Furthermore, public participation in decision making on new proposals is required. Consideration of the views and information of all interested persons promotes open communication and enables better

decision-making. Agencies, organizations, and members of the public with a potential interest in the Proposed Action, including minority, low-income, disadvantaged, and Native American groups, are urged to participate.

The EIAP for the implementation of Alpena CRTC's first INRMP (September 2013) was conducted in accordance with NEPA, CEQ *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 Code of Federal Regulations [CFR] §1500-1508), and 32 CFR 989. The EIAP and decision-making process for the Proposed Action (implementation of the 2013 Alpena CRTC INRMP) involved an examination of all environmental issues pertinent to the action proposed. Impact evaluations of the 2013 Alpena CRTC INRMP determined that no significant environmental impacts would result from implementation of the Proposed Action or any identified alternative. This determination is based on thorough review and analysis of existing resource information, and coordination with knowledgeable, responsible personnel from the MIANG and other relevant local, state, and federal agencies. The EIAP for the implementation of the 2013 Alpena CRTC INRMP does not include an analysis of effects for individual actions or projects. Individual actions or projects that have the potential to impact the environment will be analyzed separately in accordance with the NEPA process. A new EIAP is not required for this INRMP update.

If a future action or project has the potential to impact the environment, the initial step in compliance with NEPA is to complete USAF Form 813 "Request for Environmental Impact Analysis". The form is prepared to aid in the development of the assessment, providing information on the proposed action and its alternatives, purpose, and potential environmental effects. This allows the proponent to identify potential environmental impacts early and facilitates making a determination about whether an EA or an Environmental Impact Statement (EIS) might be required for a specific action. Some sections are prepared by the proponent and other sections are prepared by the Environmental Management Office. If the action is not covered by a categorical exclusion, then an EA is prepared to determine if there are potential significant impacts. If potential significant impacts are identified, either while completing USAF Form 813 or during the EA, then an EIS is prepared. The majority of natural resources management actions in this INRMP are covered by categorical exclusions.

2.3.3 Responsibilities

The updated Alpena CRTC INRMP has been organized to ensure the implementation of year-round, cost-effective management activities and projects that meet the requirements of the installation. Various personnel and organizations within Alpena CRTC that are responsible for the implementation of this INRMP are described in the following subsections.

2.3.3.1 Installation Commander

The Installation Commander oversees the installation and is responsible for ensuring the goals and objectives of the INRMP are implemented to the fullest extent practicable, based on funding and manpower availability. The installation Commander is the official signatory for the Alpena CRTC INRMP.

2.3.3.2 ANG NGB/A4AM Natural Resources Program Manager

The ANG Natural Resources Program Manager (ANG NR Program Manager) is the technical point of contact on all natural resource related activities for the ANG. The ANG NR Program Manager tracks DoD and USAF policies and approves funding for projects identified as a priority in the Alpena CRTC INRMP. The development of projects included in the Alpena CRTC INRMP and any deviations from those projects will be submitted to the ANG NR Program Manager for review. Decisions resulting from those reviews will be a cooperative effort between the ANG NR Program Manager and the EM and/or the installation's Natural Resources Manager, when applicable.

2.3.3.3 Environmental Manager

The Environmental Manager (EM) plans, budgets, approves, and oversees all environmental activities performed on the installation and is responsible for ensuring that activities associated with the implementation of this INRMP adhere to applicable federal, state, local, and USAF environmental regulations and guidelines. The EM should independently review deviation from the projects proposed in this INRMP. Projects proposed in the 182 AW INRMP are reviewed by the EM and the ANG NR Program Manager. Persons responsible for implementation of the INRMP are required to attend the Civil Engineer Corps Officers School (CECOS) DoD Natural Resources Compliance course (http://www.netc.navy.mil/centers/csfe/cecos/CourseDetail2.htm#tab25).

2.3.3.4 Base Civil Engineer

The Base Civil Engineer (CE) plans, budgets, approves, and oversees all maintenance and construction activities performed on the installation. All maintenance and construction-related projects or management activities proposed in this INRMP should be approved by the Base CE to ensure that (1) funding is available and (2) these projects are complementary to the installation's comprehensive planning processes.

2.3.3.5 Legal Office

The Legal Office is responsible for ensuring the implementation of the management objectives contained within the Alpena CRTC INRMP meet all regulatory and statutory requirements that pertain to natural resources management. The Legal Office will review any future natural resources management proposals and alert the installation Commander and EM should there be any regulatory conflicts or shortfalls. In addition, the legal office will keep participating INRMP parties informed of any new statutes or regulations that might affect natural resources management.

2.3.3.6 Safety Office

The Alpena CRTC Safety Office is responsible for development, implementation and management of the ANG BASH Program. The Safety Office also ensures that bird/wildlife strikes resulting from aircraft assigned to transient units at Alpena CRTC are accurately documented and reported to the EM and the USAF BASH Team. In addition, the Safety Office participates in the Alpena CRTC Bird Hazard Working Group (BHWG), which conducts meetings to evaluate and refine strategies for the reduction of BASH risk on Alpena CRTC. The Safety Office is responsible for coordinating with and providing required information on BASH activities to the EM. The Safety Office is also responsible for coordinating with

USDA-WS and for all the depredation activities. The Safety Office, in conjunction with the EM, is responsible for implementing all activities presented in this IRNMP that pertain to the BASH Reduction Program.

2.3.3.7 Operations and Maintenance

Operations and Maintenance personnel are responsible for all grounds maintenance activities on the installation. In addition, this office will ensure completion of the habitat management protocols established in this INRMP taking into account mission requirements, natural resource management goals, and regulatory compliance requirements. The Operations and Maintenance personnel will also periodically review the grounds maintenance equipment to determine if new or additional equipment is needed for the proper maintenance of the installation's landscapes.4 Public Affairs Office

2.3.3.8 USDA Wildlife Services

US Department of Agriculture – Wildlife Services (USDA-WS) is responsible for monitoring nuisance wildlife that have the potential to create an aircraft strike hazard. USDA-WS personnel support activities that pertain to the BASH Program and are responsible for wildlife depredation requirements within the airfield. The Environmental Management Office should hold a copy of any depredation permits under which Alpena CRTC operates. In addition, the USDA-WS, when feasible, will support wildlife and vegetation surveys conducted at Alpena CRTC or Grayling GSU properties.

2.3.3.9 Pest Management

The installation Pest Management Coordinator is responsible for the protection of real estate, control of potential disease vectors or animals of other medical importance, control of undesirable or nuisance plants and animals (including insects), and prevention of damage to natural resources. Pest management personnel utilize Integrated Pest Management (IPM) approaches and are responsible for the implementation of the IPM Plan.

2.3.3.10 Public Affairs Office

The Public Affairs Office is responsible for the coordination of public access for events at Alpena CRTC or Grayling GSU. The Public Affairs Office serves as the point-of-contact to interface between the Commander and civilian groups interested in the installations for environmental, educational, or other purposes.

2.3.3.11 US Fish and Wildlife Services

The USFWS is a signatory of the Alpena CRTC INRMP and provides input regarding natural resource projects and operational component plans. The USFWS alerts the EM and/or the ANG NR Program Manager whenever new species added to the federal threatened and endangered species lists have the potential for inhabiting Alpena CRTC or Grayling GSU. In addition, the USFWS, when feasible, will support wildlife and vegetation surveys conducted at Alpena CRTC or Grayling GSU properties.

2.3.3.12 Michigan Department of Natural Resources

The MDNR is a signatory of the Alpena CRTC INRMP and provides input regarding natural resource projects and operational component plans. The MDNR alerts the EM and/or the ANG NR Program Manager whenever new species added to the state threatened and endangered species lists have the potential for inhabiting Alpena CRTC or Grayling GSU. In addition, the MDNR, when feasible, will support wildlife and vegetation surveys conducted at Alpena CRTC or Grayling GSU properties. The MDNR may support activities that pertain to the BASH risk reduction on Alpena CRTC.

2.4 Integration with Other Plans

By its nature, an INRMP is multidisciplinary and provides the summary for natural resources at a specific installation. As a result, information from an INRMP is incorporated into other plans and other plans are written to support the INRMP. Alpena CRTC plans include the following:

- BASH Hazard Reduction Plan – provides summary of the BASH program on Alpena CRTC, including techniques, processes, responsibilities and management recommendations (MIANG 2016a).
- Integrated Pest Management Plan (IPM Plan) for Alpena CRTC – plan for management of pest species, including nuisance wildlife and invasive species, to minimize impact to mission, natural resources and the environment (Air National Guard Readiness Center [ANGRC] 2017).

In addition, this INRMP is also integrated with the following plans from other agencies:

- Wildlife Hazard Management Plan for Alpena County Regional Airport (APN) – provides a summary of the wildlife hazard management program (similar to BASH) utilized on the adjacent airport (APN 2008).
- Watershed Plans for Thunder Bay River – provides summary of major stressors, and mitigation and management recommendations for Thunder Bay River watersheds (NEMCOG [Northeast Michigan Council of Governments] 2002, 2004).
- Michigan's Wildlife Action Plan – provides summary of the wildlife in Michigan, identifies species of greatest conservation need, and provides goals, objectives, and management recommendations (https://www.michigan.gov/dnr/0,4570,7-350-79136_79608_83053---,00.html).

3.0 INSTALLATION OVERVIEW

3.1 Location and Area

The MIANG manages Alpena CRTC which is located in Alpena County, Michigan, approximately 7 miles west of Alpena (**Figure 2 and 3**). The facility is adjacent to the APN and is a joint user of the runways and Air Traffic Control (ATC) tower. Alpena CRTC comprises approximately 630 acres, including the main parcel with 515 acres and the ammunition storage parcel with 115 acres, which are leased from Alpena County (**Figure 5**). Additionally, approximately 3,000 acres of adjacent APN property are available for Alpena CRTC training under a joint-use agreement. Alpena CRTC also operates and maintains the 16-acre Grayling

GSU located within Camp Grayling Joint Maneuver Training Center's Air-to-Ground Range in Grayling, Michigan (**Figure 2 and 4**). The Grayling GSU is located approximately 100 miles southwest of Alpena CRTC in Ostego County, occupies 3 buildings, and is used to conduct aerial training (MIANG 2012; **Figures 4-6**).

Figure 2. Alpena CRTC and Grayling GSU Regional Map

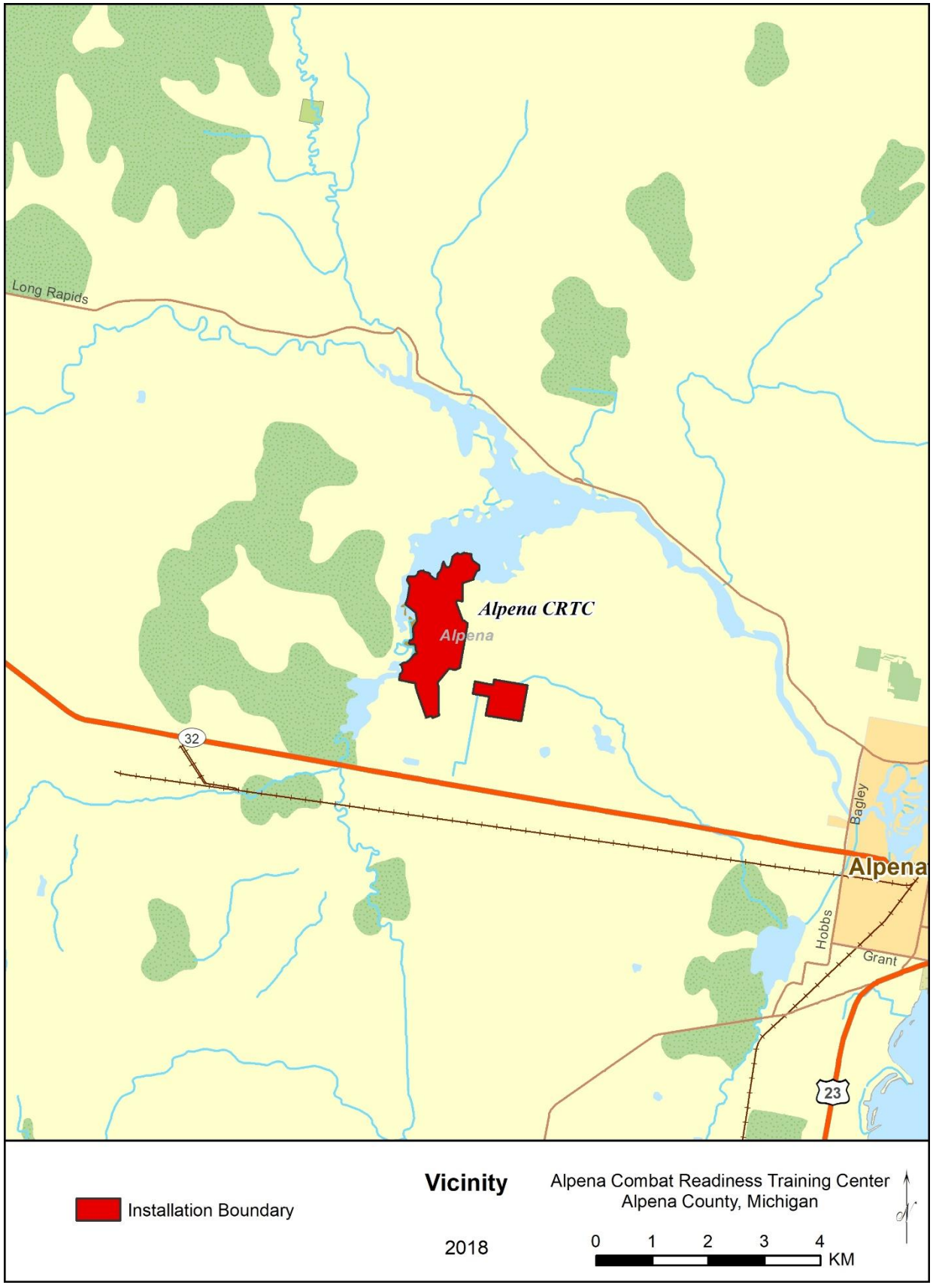


Figure 3. Alpena CRTC Vicinity Map

Figure 4. Grayling GSU Vicinity Map

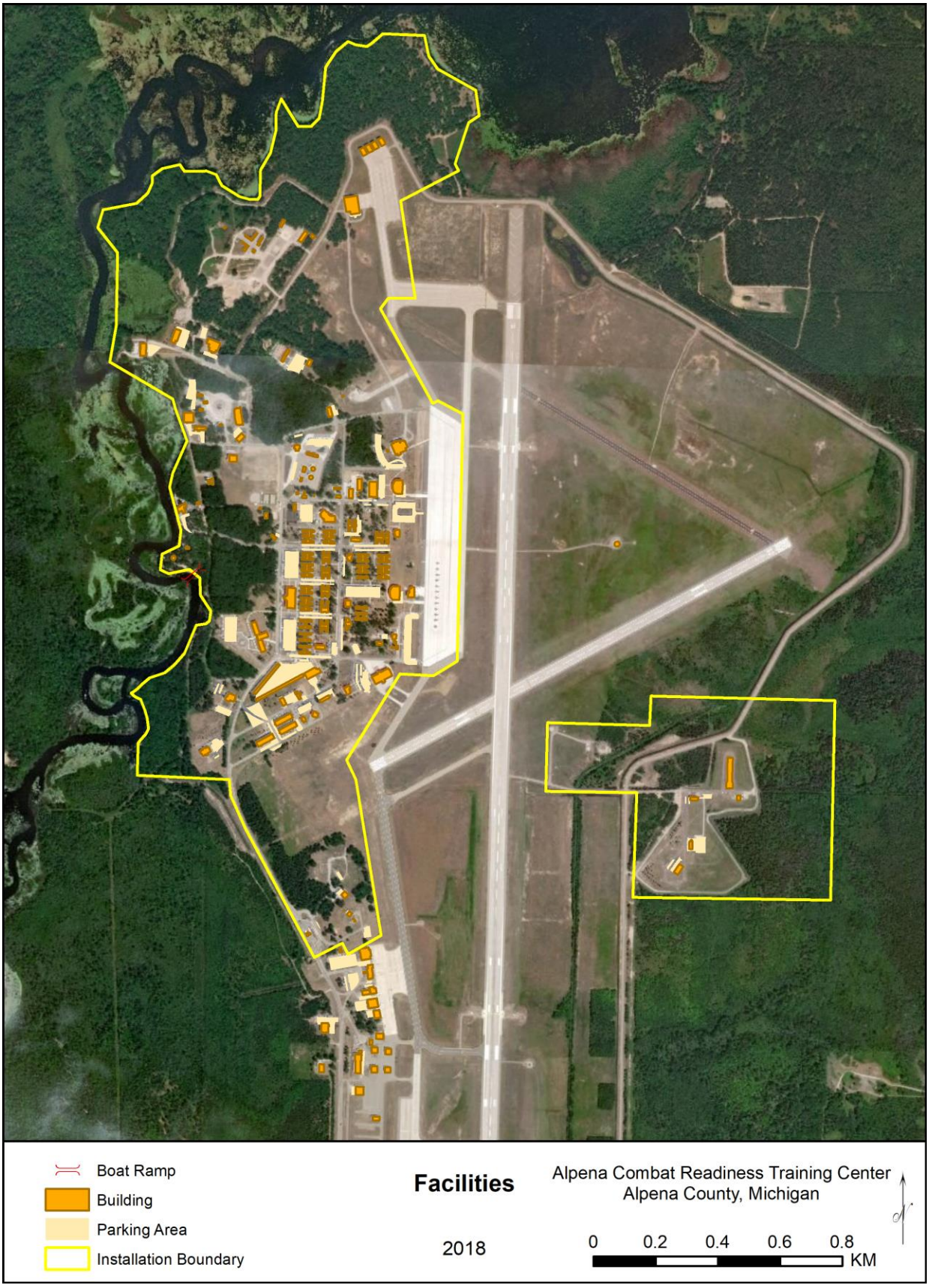


Figure 5. Alpena CRTC Facilities Map

Figure 6. Grayling GSU Facilities Map

3.2 Installation History

During the early 1900s local developers and land owners foresaw the need for a landing strip as a result of the onset of air travel and recognized the utility of local flat grasslands for that purpose. In 1931, the newly constructed airport was formally dedicated as Captain Phelps Collins Field and in 1937, the First Pursuit Group out of Selfridge Field began to use the airfield for flying maneuver and gunnery training (MIANG 2002).

As a result of World War II, the demand for training facilities became critical which led the War Assets Administration to take over the airfield. Construction began in 1942, by which time the total acreage of the base had increased to 2,500 acres. After the war, the site was solely used as a civilian airport after it was turned over to Alpena County by the War Assets Administration. However, the ANG had also expressed an interest in the facility. In 1948 negotiations began and by January 1952, plans were in place to have joint use with the civilian airport, with the facility established as an ANG Permanent Field Training Site. A period of construction followed, including extending the runways and adding an air traffic control tower in the 1960s. In 1991, the ANG site was renamed Alpena CRTC, and the mission was increased with the additional task of running an ANG Medical Readiness Training School. Shortly after, another mission was added with Air Combat Maneuver Instrumentation. In 2000, the Fire Training Site and Military Operation in Urban Terrain (MOUT) City were added and now Alpena CRTC hosts several Fireman Schools and numerous law enforcement training courses annually.

The Camp Grayling Joint Maneuver Training Center land was ceded to the United States in 1836, and in 1913, 754 acres were sold to the State of Michigan for use as the Camp Grayling Military Reservation. Over time, especially leading up to and immediately following World War II, additional acreage was added to the reservation until it reached it its current 147,000 acres. In 1970, 1,260 acres were used to create the air-to-ground range. In 1994, 16 acres of the range were transferred to the Michigan ANG and are managed by Alpena CRTC as the Grayling GSU (MIANG 2012).

3.3 Military Missions

The ANG mission is two-fold with both federal and state components. The federal mission is to maintain well-trained, well-equipped units available for prompt mobilization during war and to provide assistance during national emergencies (e.g. natural disasters or civil disturbances). During peacetime, combat-ready units and support units are assigned to USAF major commands to carry out missions compatible with training, mobilization readiness, humanitarian, and contingency operations. When units are not mobilized, they report to the governor of their respective state. The state mission is to provide protection of life, property, and preserve peace, order, and public safety.

The current mission of Alpena CRTC is to provide premier support facilities, instruction, and airspace to the DoD, Department of Home Land Security Coalition, and emergency responders to meet the mission requirements of Combatant Commanders and Civil Authorities. Grayling GSU allows for air-to-ground training under a variety of scenarios and offers multiple tactical targets (Kelley et al. 2009). Although the core mission of Alpena CRTC is to train ANG units, other DoD military units and international militaries train there regularly. Canine training and emergency response training by various groups is also common at Alpena CRTC.

3.4 Surrounding Communities

Land use in Alpena County is dominated by forestland, which accounts for 54.8% of land use (Alpena County 2014). The population of Alpena County in 2010 was 29,598, representing a population decrease of 5.5% since 2000 (US Census Bureau 2010).

Land surrounding Camp Grayling Military Reservation is relatively undeveloped and sparsely populated. Land use surrounding the Grayling GSU consists of full-time residential, recreational residential, and forest recreational zoning (ANGRC 2017).

3.5 Local and Regional Natural Areas

Located less than a mile to the west and less than 2 miles to the south of Alpena CRTC is state land within the Mackinaw State Forest. The installation is also adjacent to Thunderbay National Marine Sanctuary located in the northwest portion of Lake Huron. This marine sanctuary is 4300 square miles and includes nearly 100 of the nation's best preserved shipwrecks. Other relevant public land in the region around Alpena CRTC consists of parks with beaches on local lakes operated by Alpena County.

Camp Grayling is bounded by Au Sable State Forest to the east and west, Mackinaw State Forest to the north, and Huron National Forest to the south (ANGRC 2017).

4.0 PHYSICAL ENVIRONMENT

4.1 Climate

The climate of Alpena County is generally warm in the summer and below freezing in the winter. Between the years 1980 and 2017 the warmest month was July, with an average maximum temperature of 80.1 degrees Fahrenheit (°F). During this same period, the month of February was the coldest with an average minimum temperature of 11.2°F. The annual average rainfall is approximately 29 inches with monthly average rainfall fairly consistent throughout the year. The annual average snowfall is approximately 79.5 inches with the vast majority of snowfall occurring during the months November through April (National Weather Service [NWS] 2014).

The total annual precipitation at Camp Grayling is approximately 32 inches with the majority of this precipitation occurring between April and September. Snowfall averages approximately 94 inches per year. The average temperature during the winter is 19.5°F, while the average temperature is 65.5°F in the summer (ANGRC 2017).

In consideration of future climate resiliency scenarios at Alpena CRTC, climate is predicted to grow considerably warmer and likely wetter during this century (The Nature Conservancy 2012). Climate change models all indicate some shift in growing season over the next century with the climate of Michigan becoming more like its neighboring states to the south. Local climate changes may differ from overall regional changes and are harder to predict due to effects from the Great Lakes. The resources most likely to be impacted by climate change are special status species, invasive species, and vegetation.

4.2 Landforms

Alpena CRTC is located in the Cheboygan Lake Plain physiographic province (Omernik and Bryce 2010) which is characterized by a narrow band of sandy lake plain. Topography at Alpena CRTC is generally flat with small, steep slopes along the shore of Lake Winyah (MIANG 2006). Shallow depressions that are generally associated with wetlands, swales, or ditches are found throughout the installation and a large sinkhole is located on the north-central property line (MIANG 1995). Elevation ranges from 672 feet above mean sea level (MSL) at the shore of Lake Winyah to 700 feet above MSL at the highest point in the main land parcel of Alpena CRTC (MIANG 2006; **Figure 7**).

The Grayling GSU is located on a glacial outwash plain within the Central Lowlands physiographic province. Topography is relatively flat at the center of the range, which has an elevation of 1,230 feet above MSL, but includes low earthen berms that have been constructed along the eastern and western perimeter of the range (ANGRC 2017; **Figure 8**).

4.3 Geology and Soils

Michigan's Northern Lower Peninsula, which includes Alpena County and Alpena CRTC, was completely glaciated during the Late Wisconsinian period. Common glacial landforms in this region include lake plain, outwash plain, end moraine and ground moraine (MDNR 2012). Alpena CRTC is underlain primarily by the Deford-Au Gres-Croswell Soil Association, classified as a very deep, level to very steep, sandy and mucky soil which occurs in areas of depressions, beaches, dunes, and lake terraces (Williams 2004). For locations and brief descriptions of soil series on Alpena CRTC, see **Figure 9** (National Resources Conservation Service [NRCS] 2018).

Geology at the Grayling GSU consists of Pleistocene-aged glacial deposits that are poorly sorted, well stratified, and occasionally cross-bedded with fine to coarse sands, small gravel, and heavy cobbles. The predominant soil series surrounding Grayling GSU is the sandy Graycalm-Grayling series which has rapid permeability, slow surface runoff, high wind erosion potential, and is 'somewhat excessively drained' to 'excessively drained' (ANGRC 2017). For locations and brief descriptions of soil series on Grayling GSU, see **Figure 10** (NRCS 2018).

4.4 Hydrology

Alpena CRTC spans the Lower South Branch Thunder Bay River sub-watershed, the Lake Winyah-Thunder Bay River sub-watershed, and the Lone Lake-Ocqueoc sub-watershed (United States Geological Survey [USGS] 2012, United States Environmental Protection Agency [USEPA] 2012). Surface water bodies within Alpena CRTC are limited to a small pond in a sinkhole located in the north-central portion of the installation and a very small portion of the South Branch of the Thunder Bay River (**Figure 11**). Alpena CRTC is located above the Silurian-Devonian aquifer, which is present throughout the Lower and part of the Upper Peninsula of Michigan. Groundwater quality in specific localized areas of Alpena CRTC has been adversely affected by fuel spills or other activities however, remedial activities are in place or have been completed at these locations. The ANG is following the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process in order to properly address Perfluorooctane Sulfonate (PFOS)/Perfluorooctanoic Acid (PFOA) impacts.

Camp Grayling Military Reservation is situated in portions of the Manistee, Au Sable, and Muskegon watersheds. Potable water for range facilities are supplied by drinking water wells on site that are 213 ft. (est. 2001) and 200 ft. (est. 2016) below grade. Water from the wells are frequently tested for various water quality parameters including those required by the state (e.g. chloride, fluoride, nitrate, and nitrite), as well as additional parameters (e.g. perfluorinated compounds [PFCs], iron, lead, radon 222). No problems with the quality of potable water have been reported (ANGRC 2017; **Figure 12**).

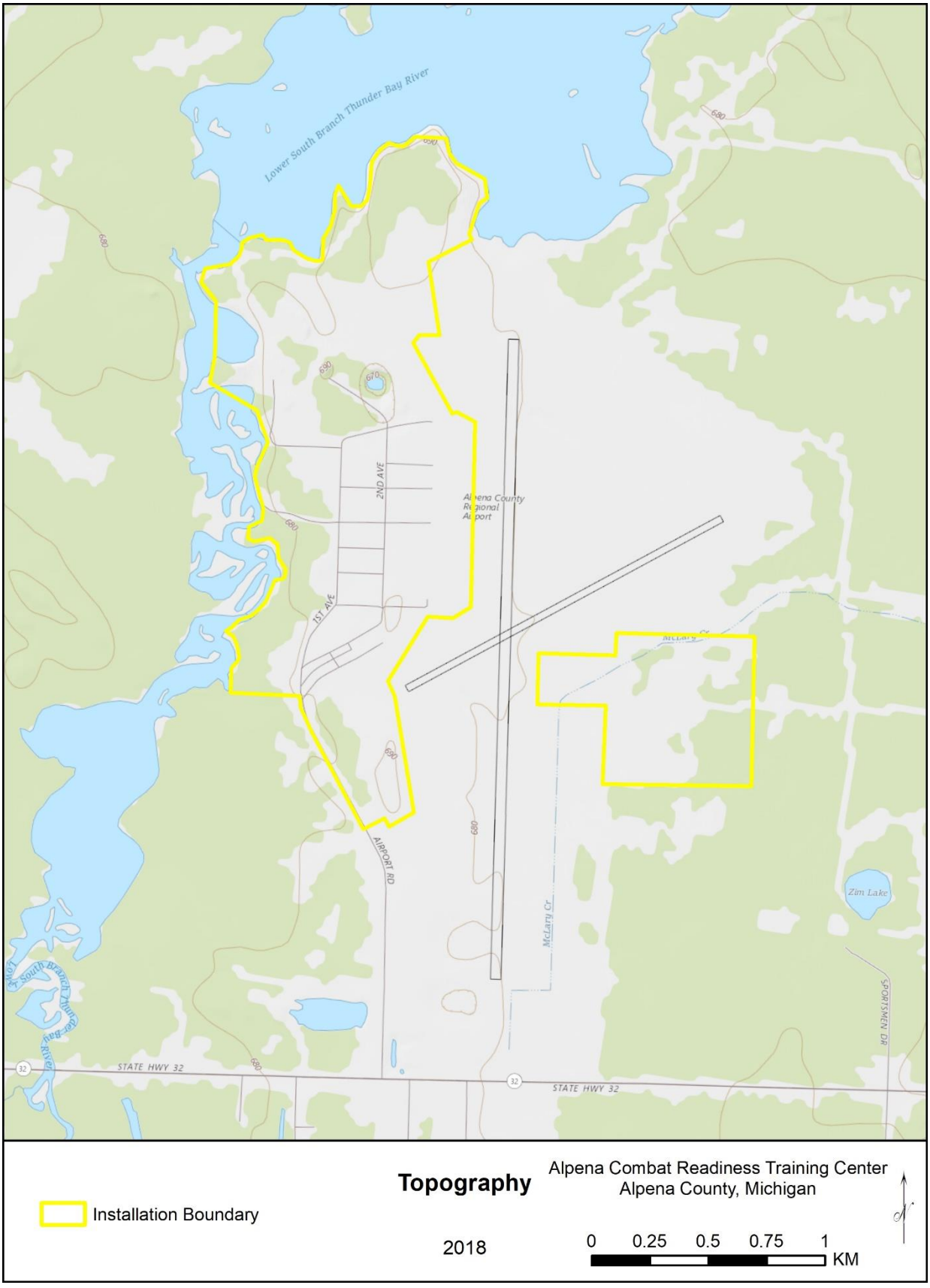


Figure 7. Alpena CRTC Topography Map

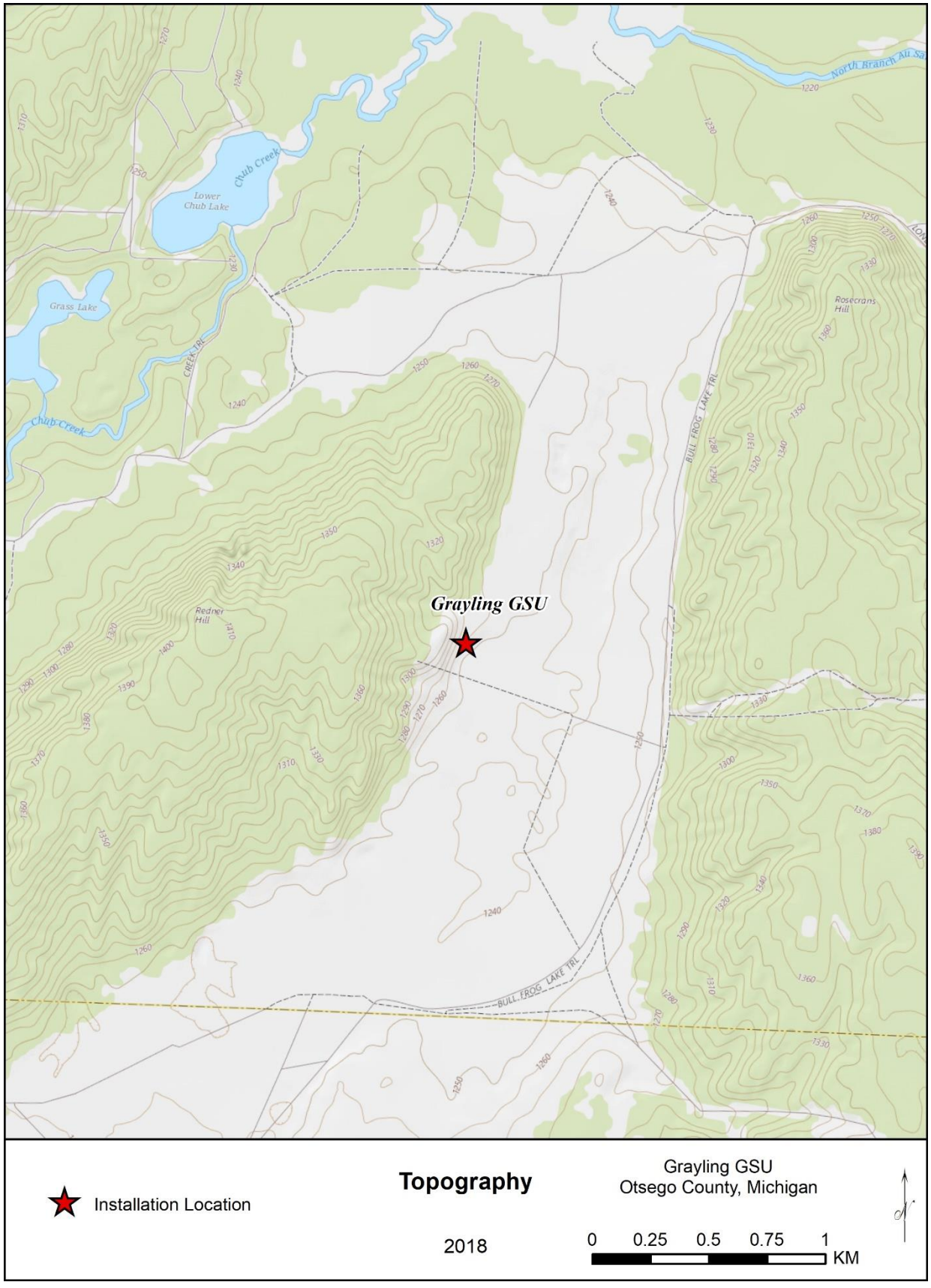


Figure 8. Grayling GSU Topography Map

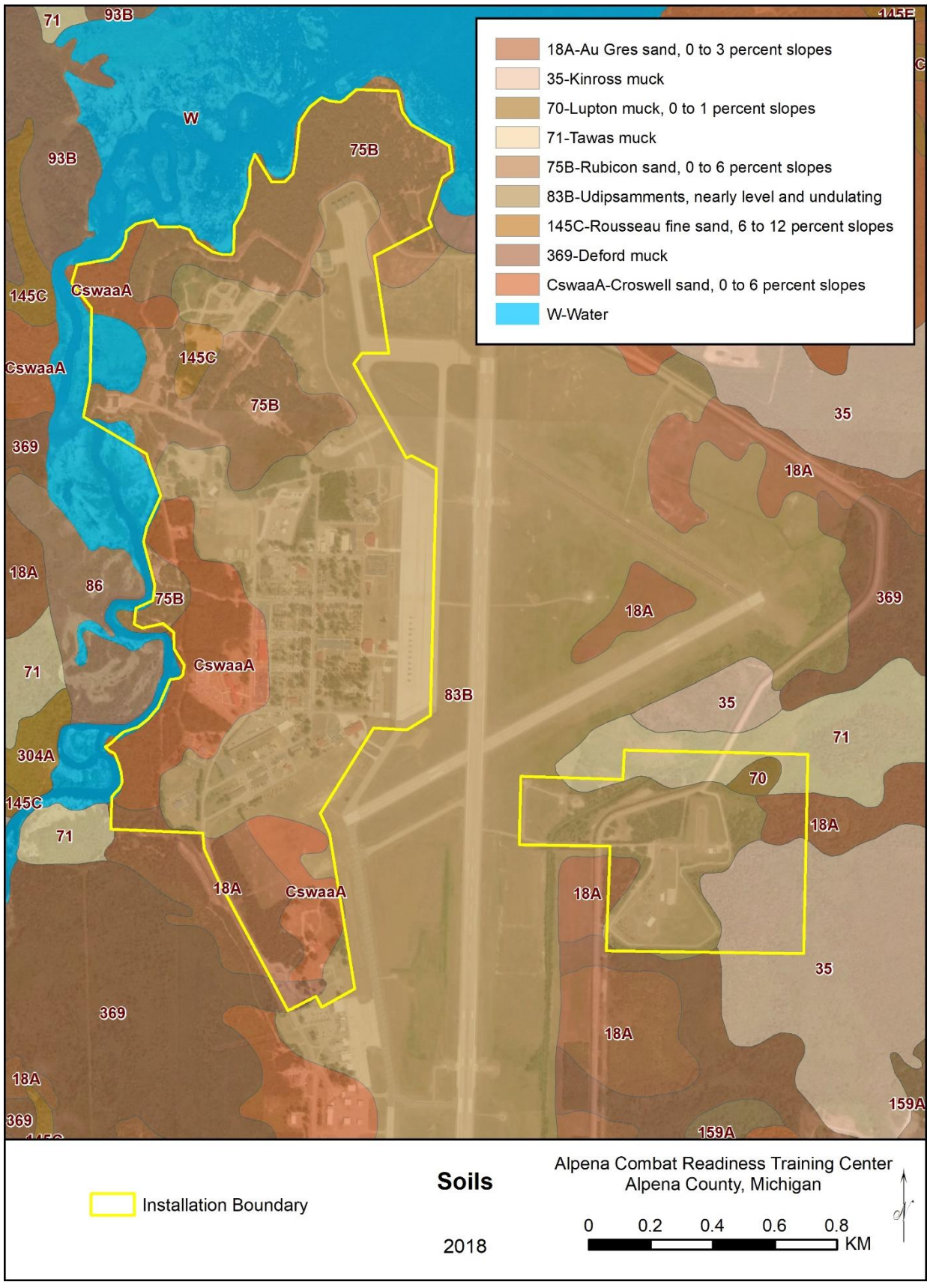


Figure 9. Alpena CRTC Soils Map

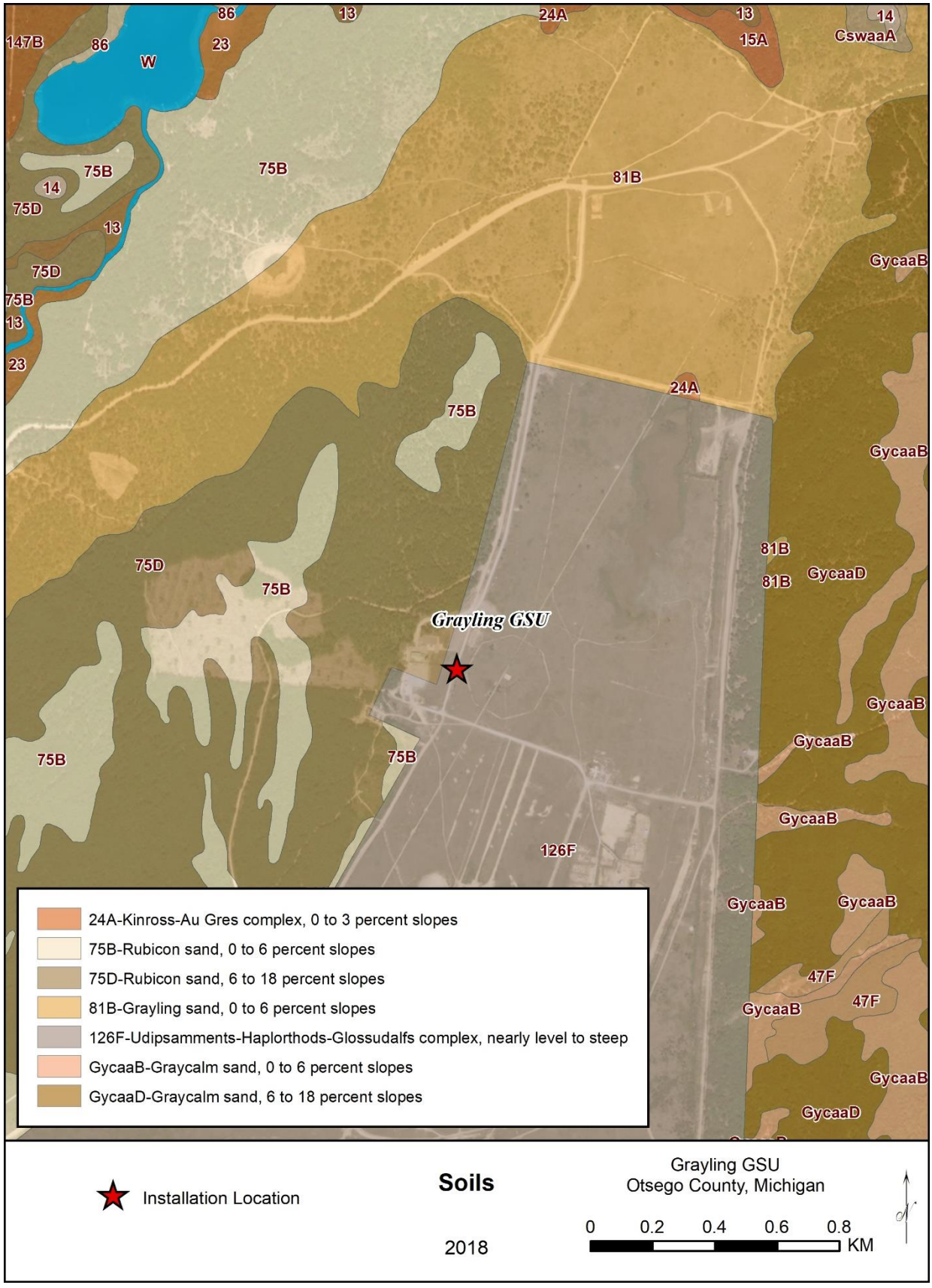


Figure 10. Grayling GSU Soils Map

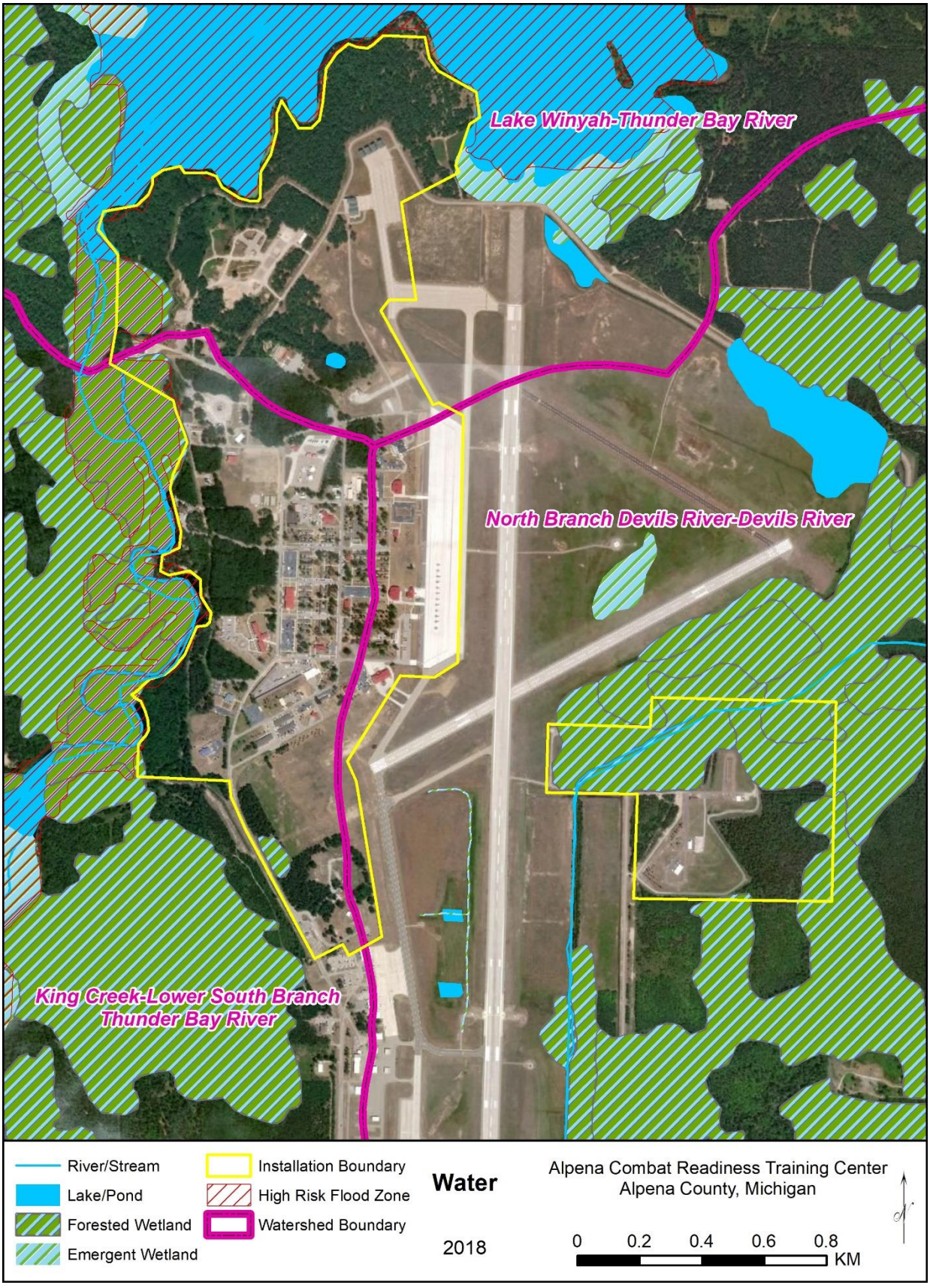


Figure 11. Alpena CRTC Water Resources Map

Figure 12. Grayling GSU Water Resources Map

5.0 ECOSYSTEMS AND THE BIOTIC ENVIRONMENT

5.1 Ecosystem Classification

Alpena CRTC is in the Laurentian Mixed Forest Province which generally has low relief with rolling hills occurring in many places. Lakes, poorly drained depressions, moraine hills, drumlins, eskers, outwash plains, and other glacial features are characteristic of the area which once was entirely covered by glaciers during parts of the Pleistocene Epoch. This province lies between the boreal forest and broadleaf deciduous forest zones and is therefore transitional in terms of the dominate vegetation type (Bailey et al. 1995).

5.2 Vegetation

5.2.1 Historic Vegetative Cover

All of Michigan, including Alpena CRTC, is considered to be a transition zone between the evergreen forests of Canada and the deciduous forests of the eastern United States. Consequently, plant species common to both forests are present throughout the state and include pine (*Pinus* spp.), spruce (*Picea* spp.), fir (*Abies* spp.), beech (*Fagus* spp.), maple (*Acer* spp.), oak (*Quercus* spp.), and willow (*Salix* spp.; Sommers 1976). Annual grasses and berry shrubs such as blueberry and huckleberry dominate open areas (ANG 2002, 2004, 2012).

5.2.2 Current Vegetative Cover

The vegetative communities on Alpena CRTC are currently described as Developed Areas (337 acres), Dry-Mesic Northern Forest (225 acres), Dry-Mesic Northern Forest (Cut Over; 55 acres), Northern Shrub Thicket (with Emergent Marsh; 11 acres), Sink Hole (0.7 acre), and River (0.4 acre). These vegetative communities are based primarily on reports prepared by Kelley et al. (2009) but updated based on current boundaries. Currently, Alpena CRTC is mostly developed with buildings, roads, parking lots, and other infrastructure. Vegetation in these areas usually consists of scattered planted specimen trees, shrubs in landscaped settings, and large maintained (mowed) areas. Some of the planted tree species are also found in the forested areas of Alpena CRTC. **Table 2** lists all vascular plant species documented on Alpena CRTC.

Table 2. Vascular Plant Species at Alpena CRTC

Scientific Name	Common Name	Scientific Name	Common Name
Abies balsamea	balsam fir	*Nuphar variegata*	variegated pond-lily
Acer rubrum	red maple	*Nymphaea odorata*	sweet-scented water lily
Alisma plantago-aquatica	water plantain	*Onoclea sensibilis*	sensitive fern
Alnus incana	speckled alder	*Osmunda cinnamomea*	cinnamon fern
Amelanchier arborea	downy juneberry	*Osmunda regalis*	royal fern
Betula pumila	bog birch	*Phalaris arundinacea*	reed canarygrass
Calamagrostis canadensis	marsh reedgrass	*Photinia melanocarpa*	black chokeberry
Carex aquatilis	water sedge	*Picea mariana*	black spruce
Carex comosa	longhair sedge	*Pinus banksiana*	jack pine
Carex crinita	fringed sedge	*Pinus resinosa*	red pine
Carex cryptolepis	Northeastern sedge	*Pinus strobus*	white pine
Carex flava	yellow sedge	*Poa pratensis*	common meadow grass
Carex interior	inland sedge	*Polygonum amphibium*	longroot smartweed
Carex lacustris	common lake sedge	*Polygonum hydropiper*	marshpepper knotweed

Table 2. Vascular Plant Species at Alpena CRTC			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Carex lasiocarpa	woollyfruit sedge	*Polygonum lapathifolium*	curlytop knotweed
Carex oliogosperma	fewseed sedge	*Polytrichum* spp.	polytrichum mosses
Carex pellita	woolly sedge	*Pontederia cordata*	pickerelweed
Carex stricta	upright sedge	*Populus gradidentata*	big-toothed aspen
Carex viridula	green sedge	*Populus tremuloides*	quaking aspen
Carex vulpinoidea	fox sedge	*Potentilla fruticosa*	shrubby cinquefoil
Chamaedaphne calyculata	leatherleaf	*Poulus balsamifera*	balsam polplar
Cladium mariscoides	fen sedge	*Pteridium aquilinum*	bracken fern
Cornus stolonifera	red-osier dogwood	*Quercus palustris*	pin oak
Dichanthelium linearifolium	slimleaf rosette grass	*Quercus rubra*	red oak
Dryopteris marginalis	marginal shield fern	*Quercus velutina*	black oak
Eleocharis acicularis	needle spikerush	*Sagittaria graminea*	grassy arrowhead
Eleocharis compressa	elliptical spikerush	*Sagittaria latifolia*	broadleaf arrowhead
Eleocharis elliptica	elliptic spikerush	*Sagittaria montevidensis*	giant arrowhead
Eleocharis equisetoides	jointed spikesedge	*Sagittaria rigida*	sessilefruit arrowhead
Eleocharis obtusa	blunt spikerush	*Salix lucida*	shining willow
Eleocharis quinqueflora	fewflower spikerush	*Salix pedicellaris*	bog willow
Eleocharis smallii	common spikerush	*Salix* spp.	willows
Eleocharis spp.	spikerushes	*Schoenoplectus acutus*	hardstem bulrush
Eriophorum viridicarinatum	thin leaved cottongrass	*Schoenoplectus pungens*	common threesquare
Equisetum fluviatile	water horsetail	*Schoenoplectus subterminalis*	swaying bulrush
Equisetum sylvaticum	wood horsetail	*Schoenoplectus tabernaemontani*	softstem bulrush
Euthamia graminifolia	grass-leaved goldenrod	*Scirpus cyperinus*	cottongrass bulrush
Festuca rubra	red fescue	*Scirpus microcarpus*	panicled bulrush
Fraxinus nigra	black ash	*Sorbus americana*	mountain ash
Fraxinus pennsylvanica	green ash	*Sparganium americanum*	American bur-reed
Gaultheria procumbens	wintergreen	*Sparganium angustifolium*	narrowleaf bur-reed
Gaylussacia baccata	huckleberry	*Sparganium chlorocarpum*	European bur-reed
Gentianopsis crinite	fringed gentian	*Sparganium eurycarpum*	broadfruit bur-reed
Glyceria borealis	small floating mannagrass	*Sparganium fluctuans*	floating bur-reed
Glyceria canadensis	rattlesnake mannagrass	*Sparganium minimum*	small bur-reed
Glyceria striata	fowl mannagrass	*Spiraea alba*	meadowsweet
Juncus articus	wild juncus	*Spiraea tomentosa*	steeplebush
Kalmia angustifolia	sheep laurel	*Spiranthes romanzoffiana*	hooded ladies' tresses
Larix laricina	tamarack	*Spirodela polyrhiza*	great duckweed
Ledum groenlandicum	Labrador tea	*Thuja occidentalis*	northern white cedar
Leersia oryzoides	cut grass	*Tipularia discolor*	cranefly orchid
Lemna minor	small duckweed	*Toxicodendron radicans*	poison ivy
Lysimachia thyrsiflora	tufted loosestrife	*Typha angustifolia*	narrow-leaved cattail
Maianthemum canadense	Canada mayflower	*Typha latifolia*	broadleaf cattail
Meleola virginiana	Indian cucumberroot	*Vaccinium angustifolium*	lowbush blueberry
Muhlenbergia glomerata	wild timothy	*Veronica serpyllifolia*	thyme-leaved speedwell
Nuphar lutea	yellow pond-lily		
Source: Kelley et al. 2009, ANG 2013			

Natural vegetation communities are generally lacking at the Grayling GSU. Vegetation at facilities currently consists of scattered planted specimen trees, shrubs in landscaped settings close to buildings, and an area of maintained lawn adjacent to the flight and flanking towers. A fenced-off disturbed area in the center of the range is covered by low vegetation consisting of grasses and herbs (Kelley et al. 2009). **Table 3** lists all vascular plant species documented on Grayling GSU.

Table 3. Vascular Plant Species at Grayling GSU			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Pinus banksiana	jack pine	*Prunus serotina*	black cherry
Pinus resinosa	red pine	*Quercus prinus*	chestnut oak
Pinus strobus	white pine	*Quercus velutina*	black oak
Source: Kelley et al. 2009, ANG 2013			

5.3 Fish and Wildlife

Wildlife habitat at Alpena CRTC is primarily associated with forested and wetland habitats. A formal wildlife survey was conducted in 2009 for Alpena CRTC and Grayling GSU including protocol level surveys of herpetofauna, fish, birds, and mammals. These surveys documented a number of wildlife species including 5 amphibian species, 7 reptile species, 85 bird species, and 52 mammal species (**Tables 4-9**; Kelley et al. 2009).

Table 4. Bird Species at Alpena CRTC			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Actitis macularius	spotted sandpiper	*Hirundo rustica*	barn swallow
Agelaius phoeniceus	red-winged blackbird	*Hydroprogne caspia*	Caspian tern
Aix sponsa	wood duck	*Hylocichla mustelina*	wood thrush
Ammodramus savannarum	grasshopper sparrow	*Icterus galbula*	Baltimore oriole
Anas acuta	northern pintail	*Junco hyemalis*	dark-eyed junco
Anas americana	American wigeon	*Lanius ludocivianus*	loggerhead shrike
Anas clypeata	northern shoveler	*Larus argentatus*	herring gull
Anas crecca	green-winged teal	*Larus delawarensis*	ring-billed gull
Anas discors	blue-winged teal	*Limnodromus griseus*	short-billed dowitcher
Anas platyrhynchos	mallard	*Limnodromus scolopaceus*	long-billed dowitcher
Anas rubripes	American black duck	*Lophodytes cucullatus*	hooded merganser
Anas strepera	gadwall	*Megascops asio*	eastern screech-owl
Archilochus colubris	ruby-throated hummingbird	*Melanerpes erythrocephalus*	red-headed woodpecker
Ardea alba	great egret	*Meleagris gallopavo*	wild turkey
Ardea herodias	great blue heron	*Melospiza melodia*	song sparrow
Aythya affinis	lesser scaup	*Mergus merganser*	common merganser
Aythya collaris	ring-necked duck	*Mniotilta varia*	black-and-white warbler
Bartramia longicauda	upland sandpiper	*Molothrus ater*	brown-headed cowbird
Bombycilla cedrorum	cedar waxwing	*Myiarchus crinitus*	great crested flycatcher
Bonasa umbellus	ruffed grouse	*Nycticorax nycticorax*	black-crowned night-heron
Botaurus lentiginosus	American bittern	*Oporonis philadelphia*	mourning warbler
Branta canadensis	Canada goose	*Oreothlypis ruficapilla*	Nashville warbler
Bubo virginianus	great horned owl	*Oxyura jamaicensis*	ruddy duck
*Bubo scandiacus**	snowy owl	*Passer domesticus*	house sparrow
Bucephala albeola	bufflehead	*Passerculus sandwichensis*	savannah sparrow
Buteo jamaicensis	red-tailed hawk	*Passerina cyanea*	indigo bunting
Buteo lagopus	rough-legged hawk	*Phalacrocorax auritus*	double-crested cormorant
Buteo lineatus	red-shouldered hawk	*Phasianus colchicus*	ring-neck pheasant
Butorides virescens	green heron	*Pheucticus ludovicianus*	rose-breasted grosbeak
Calidris alpine	dunlin	*Picoides pubescens*	downy woodpecker
Calidris himantopus	stilt sandpiper	*Picoides villosus*	hairy woodpecker
Calidris melanotos	pectoral sandpiper	*Piranga olivacea*	scarlet tanager
Calidris minutilla	least sandpiper	*Plectrophenax nivalis*	snow bunting
Calidris pusilla	semipalmated sandpiper	*Podilymbus podiceps*	pied-billed grebe
Carpodacus mexicanus	house finch	*Poecile atricapillus*	black-capped chickadee

Table 4. Bird Species at Alpena CRTC			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Cathartes aura	turkey vulture	*Polioptila caerulea*	blue-gray gnatcatcher
Catharus guttatus	hermit thrush	*Pooecetes gramineus*	vesper sparrow
Catharus ustulatus	Swainson's thrush	*Porzana carolina*	sora
Certhia americana	brown creeper	*Protonotaria citrea*	prothonotary warbler
Ceryle alcyon	belted kingfisher	*Quiscalus quiscula*	common grackle
Charadrius semipalmatus	semipalmated plover	*Rallus limicola*	Virginia rail
Charadrius vociferus	killdeer	*Regulus calendula*	ruby-crowned kinglet
Chen caerulescens	snow goose	*Regulus satrapa*	golden-crowned kinglet
Chlidonias niger	black tern	*Riparia*	bank swallow
Chordeiles minor	common nighthawk	*Sayornis phoebe*	eastern phoebe
Chroicocephalus philadelphia	Bonaparte's gull	*Seiurus aurocapillus*	ovenbird
Circus cyaneus	northern harrier	*Seiurus noveboracensis*	northern waterthrush
Cistothorus palustris	marsh wren	*Setophaga coronata*	yellow-rumped warbler
Colaptes auratus	northern flicker	*Setophaga petechia*	yellow warbler
Columba livia	rock pigeon	*Setophaga pinus*	pine warbler
Contopus virens	eastern wood-pewee	*Setophaga ruticilla*	American redstart
Corvus brachyrhynchos	American crow	*Setophaga virens*	black-throated green warbler
Corvus corax	common raven	*Sialia sialis*	eastern bluebird
Cyanocitta cristata	blue jay	*Sitta canadensis*	red-breasted nuthatch
Cygnus columbianus	tundra swan	*Sitta carolinensis*	white-breasted nuthatch
Cygnus olor	mute swan	*Sphyrapicus varius*	yellow-bellied sapsucker
Dendroica caerulescens	black-throated blue warbler	*Spinus tristis*	American goldfinch
Dendroica castanea	bay-breasted warbler	*Spizella arborea*	American tree sparrow
Dendroica fusca	blackburnian warbler	*Spizella passerina*	chipping sparrow
Dendroica magnolia	magnolia warbler	*Stelgidopteryx serripennis*	northern rough-winged swallow
Dendroica palmarum	palm warbler	*Strix varia*	barred owl
Dendroica pensylvanica	chestnut-sided warbler	*Sturnella magna*	eastern meadowlark
Dendroica striata	blackpoll warbler	*Sturnus vulgaris*	European starling
Dendroica tigrina	Cape May warbler	*Tachycineta bicolor*	tree swallow
Dolichonyx oryzivorus	bobolink	*Toxostoma rufum*	brown thrasher
Dryocopus pileatus	pileated woodpecker	*Tringa flavipes*	lesser yellowlegs
Dumetella carolinensis	gray catbird	*Tringa melanoleuca*	greater yellowlegs
Empidonax alnorum	alder flycatcher	*Tringa solitaria*	solitary sandpiper
Empidonax minimus	least flycatcher	*Troglodytes aedon*	house wren
Empidonax traillii	willow flycatcher	*Turdus migratorius*	American robin
Eremophila alpestris	horned lark	*Tyrannus*	eastern kingbird
Euphagus carolinus	rusty blackbird	*Vermivora peregrine*	Tennessee warbler
Falco sparverius	American kestrel	*Vireo gilvus*	warbling vireo
Fulica americana	American coot	*Vireo olivaceus*	red-eyed vireo
Gallinago delicate	Wilson's snipe	*Wilsonia canadensis*	Canada warbler
Gallinula chloropus	common moorhen	*Wilsonia pusilla*	Wilson's warbler
Gavia immer	common loon	*Zenaida macroura*	mourning dove
Geothlypis trichas	common yellowthroat	*Zonotrichia albicollis*	white-throated sparrow
Grus canadensis	sandhill crane	*Zonotrichia leucophrys*	white-crowned sparrow
Haliaeetus leucocephalus	bald eagle		

Source: Kelley et al. 2009, MIANG 2016a
**Seen on the airfield; L. Kruse, personal communication*

Table 5. Bird Species at Grayling GSU			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Agelaius phoeniceus	red-winged blackbird	*Quiscalus quiscula*	common grackle
Carduelis tristis	American goldfinch	*Spizella passerina*	chipping sparrow
Corvus brachyrhynchos	American crow	*Spizella pusilla*	field sparrow
Corvus corax	common raven	*Tachycineta bicolor*	tree swallow
Cyanocitta cristata	blue jay	*Toxostoma rufum*	brown thrasher
Falco comumbarius	Merlin	*Turdus migratorius*	American robin
Pheucticus ludovicianus	rose-breasted grosbeak	*Zenaida macroura*	mourning dove
Pooecetes gramineus	vesper sparrow		
Source: Kelley et al. 2009, MIANG 2016a			

Table 6. Mammal Species at Alpena CRTC			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Canis latrans	coyote	*Peromyscus maniculatus*	deer mouse
Castor canadensis	beaver	*Procyon lotor*	common raccoon
Didelphis virginiana	Virginia opossum	*Sciurus carolinensis*	eastern gray squirrel
Erethizon dorsatum	porcupine	*Sciurus niger*	fox squirrel
Lutra canadensis	river otter	*Spermophilus tridecemlineatus*	thirteen-lined ground squirrel
Lynx rufus	bobcat	*Sus scrofa*	feral pig
Marmota monax	woodchuck	*Sylvilagus floridanus*	eastern cottontail
Mephitis	striped skunk	*Tamias striatus*	eastern chipmunk
Odocoileus virginianus	white-tailed deer	*Tamiasciurus hudsonicus*	red squirrel
Ondatra zibethicus	common muskrat	*Ursus americanus*	black bear*
Peromyscus leucopus	white-footed mouse		
Source: Kelley et al. 2009 * Observed by personnel on installation			

Table 7. Mammal Species at Grayling GSU			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Sciurus carolinensis	eastern gray squirrel	*Sylvilagus floridanus*	eastern cottontail
Sciurus niger	fox squirrel	*Taxidea taxus*	badger
Source: Kelley et al. 2009			

Table 8. Herpetofauna Species at Alpena CRTC			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Amphibians			
Bufo americanus	eastern American toad	*Plethodon cinereus*	red-backed salamander
Hyla versicolor or Hyla chrysoscelis	gray treefrog or Cope's gray treefrog	*Rana clamitans melanota*	northern green frog
Reptiles			
Chelydra serpentine	eastern snapping turtle	*Opheodrys vernalis*	smooth greensnake
Chrysemys picta marginata	midland painted turtle	*Storeria occipitomaculata*	northern red-bellied snake
Emydoidea blandingii	Blanding's turtle	*Thamnophis sauritus septentrionalis*	northern ribbonsnake
Nerodia sipedon	northern watersnake		
Source: Kelley et al. 2009			

Table 9. Herpetofauna Species at Grayling GSU			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Eumeces fasciatus	common five-lined skink	*Thamnophis sirtalis*	Eastern garternsnake
Source: Kelley et al. 2009			

5.4 Threatened and Endangered Species and Species of Concern

Federal status as a threatened or endangered species is derived from the ESA of 1973 (16 USC §1531 et seq.) and administered by the USFWS. No federally listed threatened or endangered species are known to occur within the boundaries of Alpena CRTC. However, several resident bald eagles (*Haliaeetus leucocephalus*), which were recently delisted under the federal ESA but remain protected under the Bald and Golden Eagle Protection Act (BGEPA), have been documented flying over Alpena CRTC.

The Endangered Species Act of the State of Michigan (MESA; Part 365 of PA 451, 1994 Michigan Natural Resources and Environmental Protection Act [NREPA]) regulates state listed species in Michigan. Four state-listed wildlife species (Red-shouldered hawk, common loon, common tern, Caspian tern) have been documented on or immediately adjacent to Alpena CRTC, while no state-listed plant species have been documented.

There are 16 priority special status species identified for Alpena CRTC (listed below). These species include 1 insect, 1 fish, 1 reptile, 7 birds, 5 plants, and 1 mammal. Priority species were identified based on their listing status (federal or state), whether they have been documented on Alpena CRTC, and likelihood to occur on Alpena CRTC. All federally listed species with the potential to occur are priority species, regardless of whether they have been documented on the installation.

Federal Special Status Species

- Federally and state-endangered piping plover (*Charadrius melodus*)
- Federally and state-endangered Hine's emerald dragonfly (*Somatochlora hineana*)
- Federally and state-threatened lake dwarf iris (*Iris lacustris*)
- Federally threatened eastern massasauga rattlesnake (*Sistrusus catenatus*)
- Federally threatened and state-threatened northern long-eared bat (*Myotis septentrionalis*)
- Federally and state-threatened Pitcher's thistle (*Cirsium pitcheri*)
- Federally threatened red knot (*Calidris canutus*)
- Federally protected bald eagle (*Haliaeetus leucocephalus*)

State Special Status Species

- State-endangered pugnose shiner (*Notropis anogenus*)
- State-threatened red-shouldered hawk (*Buteo lineatus*)
- State-threatened common loon (*Gavia immer*)
- State-threatened common tern (*Sterna hirundo*)
- State-threatened Caspian tern (*Hydroprogne caspia*)
- State-threatened lake cress (*Rorippa aquatic*)
- State-threatened walking fern (*Asplenium rhizophyllum*)
- State-threatened pine-drops (*Pterospora andromedea*)

5.5 Waters of the US, Wetlands, and Floodplains

Surface water drainage within the majority of Alpena CRTC is limited due to the relatively flat topography and sandy, well-drained soils. Surface water flow in the western portion of the facility drains into small ditches and one creek which directs water into the Lower South Branch of the Thunder Bay River and then flows directly into Lake Winyah. Surface water in the northern portion of the facility flows directly into Lake Winyah, and ultimately north to Lake Besser and the Thunder Bay River. The only significant channel is McLary Creek in the eastern portion of the facility which flows north and east into Mud Lake, Thunder Bay River, and finally into Lake Huron (ANGRC 1996, ANG 2013). There are 2 additional intermittent streams associated with McLary Creek, 1 ephemeral stream located along the western boundary, and a small portion of the South Branch of Thunder Bay River that is within the boundary of Alpena CRTC (**Figure 11**). Based on a water resources delineation studies at Alpena CRTC (ANG 2013, MDEQ 2015), there are 7 wetlands with approximately 32 acres of emergent, scrub-shrub, and forested wetlands on Alpena CRTC. Roughly half occur near the River Club restaurant along the South Branch of Thunder Bay River, while the other half occur in the storage area to the east of the runways. Finally, there is also a small wetland south of the River Club near the installation entrance (MDEQ 2015).

The surface water bodies nearest the Grayling GSU include Chub Creek located approximately 1.2 miles to the north; Sand Lake located approximately 2 miles to the east; Lonesome Lake located approximately 2 miles to the southeast; Timber Lake located approximately 3 miles to the south; Barnes Lake located approximately 3 miles to the southwest; Bull Frog Lake located approximately 2.5 miles to the southwest; Marsh Lake located approximately 1.9 miles to the southwest; Section One Lake located approximately 2.3 miles to the southwest; Guthrie Lake located approximately 1.4 miles to the west; Lower Chub Lake located approximately 1 mile to the northwest; and Grass Lake located approximately 1.2 miles to the northwest. Barnes, Timber, and Bull Frog Lakes are located inside the Air-to-Ground Range fence line. The Grayling GSU is located within the Au Sable River drainage basin, which has a drainage area of 1,540 square miles and is a major tributary to Lake Huron to the east. The majority of surface water runoff from storm events is prohibited from draining offsite due to the earthen berms located along the eastern and western boundaries of the air-to-ground range. Rather, surface water runoff rapidly permeates into the range's underlying soil (ANGRC 2017).

As shown on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps from November 2011, most of Alpena CRTC and Grayling GSU is located in Zone X and therefore outside the 100-year and 500-year floodplains (FEMA 2011). However, a small portion in the northwest corner of Alpena CRTC, a forested wetland, is categorized in Zone A and is therefore within a 100-year floodplain (**Figures 11 and 12**).

5.6 Other Natural Resource Information

As directed by EO No. 11989, Off Road Vehicles on Public Lands, outlines the use of any off-road vehicles (ORV), including mountain bikes, will be allowed only after thoroughly analyzing the impact of such use on soils, archeological sites, wildlife, water quality, and other ecosystem attributes. Periodically monitor and evaluate any areas designated for ORV use for damage.

6.0 MISSION IMPACTS ON NATURAL RESOURCES

6.1 Natural Resources Needed to Support the Military Mission

Physical support of the mission may include land area required for quantity/distance arcs associated with the weapons storage area and the explosive ordinance disposal area, surface danger zones associated with weapons ranges, training areas, prevention of soil erosion, and water quality protection. Degradation of natural resources can result in unintended impacts to the military mission, impaired readiness, and funds spent on natural resources crisis management and interventions rather than the military mission. The MIANG needs the installation lands and its natural resources to work together in a functioning ecosystem to support the military mission. Management activities in this INRMP are designed to support the desired habitats and ecosystem functions to meet this objective.

6.2 Natural Resources Constraints to Mission and Mission Planning

The most significant natural resources constraints to Alpena CRTC's mission and mission planning are related to wetlands, water quality protection, and reducing BASH risk. There are currently no significant constraints from threatened and endangered species, however, any new activities or infrastructure could be limited in areas where federal or state-listed species are found to be present in the future. There are plans for additional development (e.g. construction and expansion of buildings, infrastructure improvements, demolition) as described in the EA for Installation Development Projects at Alpena CRTC (MIANG 2016b). These activities were determined to not have a significant impact on the environment and therefore did not require the preparation of an EIS.

The primary sustainability challenge on Alpena CRTC, as it is currently used and projected to be used in the near future, is the ability to (1) protect water quality in South Branch Thunder Bay River and Lake Winyah and (2) manage BASH risk. The following 3 natural resources management issues have been identified as having the potential to impact the military mission:

- Lack of information about species present, particularly listed species.
- Lack of information about wetland status throughout the facility.
- Erosion issues along the shorelines of Lower South Branch Thunder Bay River and Lake Winyah that could impact water quality if allowed to expand.

<u>Land Use</u>

Alpena CRTC consists of numerous buildings in support of aircraft maintenance and operation as well as other functions of the MIANG. The primary land use on the main parcel is aircraft operations, which includes the aircraft parking apron and main hangar as well as various other support facilities. Alpena CRTC is a co-user of the APN Runways 01/19, 07/25, and 13/31 as well as the ATC tower. Maintenance facilities located throughout the developed portion of the installation serve aircraft, support equipment, and support vehicles. Support facilities include civil engineering, base supply, the vehicle fueling station, and a guard kiosk. In addition, there is a separate parcel to the east of the runways for ammunition storage.

<u>Current Major Impacts</u>

There are 4 primary areas of potential impacts to natural resources from the military mission of MIANG:

1. Wetland management.
2. Impacts to water quality in South Branch Thunder Bay River and Lake Winyah.
3. Impacts to migratory birds.
4. Impacts to state or federally-listed species.

Potential Future Impacts

There are no known projected changes in mission or potential impacts

7.0 NATURAL RESOURCES PROGRAM MANAGEMENT

7.1 Natural Resources Program Management

The guiding philosophy of Alpena CRTC INRMP is to take an ecosystems approach to managing natural resources. Ecosystem management is based on clearly stated goals and objectives, and associated activities and projects. This INRMP identifies goals and objectives, and presents the means to accomplish them, as well as the methodologies to monitor results.

7.2 Fish and Wildlife Management

Wildlife management involves manipulating various aspects of an ecosystem to benefit chosen wildlife species. Management of habitats generally is focused to benefit native species, particularly rare species and game species. The Alpena CRTC INRMP will manage the wildlife and its habitat by implementing the strategies listed below:

- Limit the amount of pesticides used for invasive species control, and use mechanical methods whenever possible.
- Maintain grass heights between 7-14 inches in open fields.
- Provide for wildlife movement between natural areas where possible.
- Follow the management strategies for reducing BASH risk.

Fish and wildlife management at Alpena CRTC will focus on maintaining and restoring natural habitat favorable for indigenous fish and wildlife in a manner consistent with the military mission and all applicable laws and regulations. In addition to general fish and wildlife management, there are management needs associated with minimizing BASH-related risk at Alpena CRTC because the military mission involves flight operations.

7.2.1 Federal Wildlife Policies and Regulations

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits, unless permitted by regulations, the pursuit, hunting, take, capture, killing or attempting to take, capture, kill, or possess any migratory bird included in the MBTA, including any part, nest, or egg of any such bird (16 USC § 703). The DoD has a Memorandum of Understanding (MOU) with the USFWS pursuant to EO 13186 Responsibilities of Federal Agencies to Protect Migratory Birds, which outlines a collaborative approach to promote the conservation of migratory bird populations. This MOU specifically

pertains to natural resource management activities, including, but not limited to, habitat management, erosion control, forestry activities, invasive weed management, and prescribed burning. It also pertains to installation support functions, operation of industrial activities, construction and demolition activities, and hazardous waste cleanup. In February 2007, the USFWS finalized regulations for issuing incidental take permits to the DoD. If any of the Armed Forces determine that a proposed or an ongoing military readiness activity may result in a significant adverse effect on a population of migratory bird species, then they must confer and cooperate with the USFWS to develop appropriate and reasonable conservation measures to minimize or mitigate identified significant adverse effects (50 CFR Part 21).

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668-668c), enacted in 1940 and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof."

In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment.

Partners in Flight

The DoD Partners in Flight (PIF) program consists of natural resources personnel from military installations across the United States working collaboratively with partners throughout the Americas to conserve migratory and resident birds and their habitats on DoD lands. PIF sustains and enhances the military mission through proactive, habitat-based conservation and management strategies that maintain healthy landscapes and training lands. Additionally, PIF works beyond installation boundaries to facilitate cooperative partnerships, determine the current status of bird populations, and prevent the listing of additional birds as threatened or endangered. DoD PIF provides a scientific basis for maximizing the effectiveness of resource management, enhancing the biological integrity of DoD lands, and ensuring continued use of these lands to fulfill military training requirements.

Pollinator Conservation

The DoD has emphasized the importance of pollinator conservation to the military services by developing partnerships to support their conservation. DoD has MOUs with Bat Conservation International (BCI) and Pollinator Partnership (P2) and has developed the USAF Pollinator Conservation Reference Guide (March 2018). The MOU with BCI "establishes a policy of cooperation and coordination between DoD and BCI to identify, document and maintain bat populations and their habitats on DoD installations" (signed Oct 2006, renewed Dec. 2011). The MOU with P2 is "to establish a framework for cooperative programs that promote the conservation and management of pollinators, their habitats and associated ecosystems" (signed February 9, 2015).The MOU states that this framework is important to "ensure that pollinator management activities are incorporated where practicable, into INRMPs and practices."

Conservation of pollinators by USAF alone or in collaboration with groups such as BCI and P2 supports these DoD initiatives.

Some areas of ANG installations are more suitable for pollinator habitat conservation due to current use and/or habitat condition. For example, conservation on unimproved (natural) areas, buffers, recreation areas, rights-of-way, golf courses, and landscaped areas may be more compatible with mission requirements than other areas. These areas should be a priority for implementing pollinator habitat improvements and using land management practices in ways beneficial to pollinators.

The USAF Pollinator Conservation Reference Guide provides specific pollinator conservation measures which can be implemented by the USAF. The USAF Pollinator Conservation Reference Guide was finalized March 2018, and is available on USFWS and AFCEC eDASH Natural Resources website. The USAF Pollinator Reference Guide, developed by the USFWS, establishes guidance as a National Pollinator Conservation Strategy on lands owned by the USAF. It supplements existing policy and instructions to guide USAF actions to contribute to pollinator conservation under Presidential Memo and Federal Pollinator Health Strategy. Further, it provides Technical Guides as reference materials for pollinators of conservation concern (listed species, birds of conservation concern, bees and monarch butterflies), and native plant recommendations specific to ecoregions.

Information concerning the implementation of the ESA can be found in **Sections 2.3.1** and **10.1.5**.

7.2.2 Nuisance Wildlife and Wildlife Diseases

Other than those that present a BASH risk, there are few nuisance wildlife species at Alpena CRTC. Feral hogs do occur but are very rare and generally are not permitted due to potential BASH risk.

Future nuisance wildlife problems will be evaluated in conjunction with USDA-WS personnel, if appropriate, and any solutions will follow the IPM Plan. Diseases affecting fish and wildlife may occur on the installation. Any large-scale fish and wildlife deaths and unnatural behavior occurring on the installation will be reported, recorded, and investigated in conjunction with USFWS, USDA-WS, EPA, MDEQ, and MDNR personnel, if appropriate.

7.2.3 Management of Threatened and Endangered Species and Habitats

This section presents information about the management of priority species that are located within, or with the potential to occur, at Alpena CRTC along with requirements and strategies for their management. As additional surveys and natural resources management activities are conducted, it is possible other species may be added in the future. Currently, there are 16 priority species. General management recommendations are provided but the most current, detailed management practices for each species can be found from the USFWS and MDNR.

7.2.3.1 Federally Special Status Wildlife Species

There are 8 federally listed priority species at Alpena CRTC and their management strategies are listed below. Information concerning implementation of the ESA can be found in **Sections 2.3.1** and **10.1.5**.

Piping Plover
Photo by USFWS

Piping plover: Alpena CRTC has limited potential habitat for piping plovers, primarily along Lake Winyah. However, this habitat is marginal, and this species was not documented in either the 2007 winter Christmas Bird Count (Kelley et al. 2009) or the surveys associated with the BASH plan (MIANG 2016a). Due to its status as a federally endangered species and potential for transients from the breeding population on the shore of Lake Huron, the piping plover remains a priority species for Alpena CRTC. The following management strategies are recommended, if documented on Alpena CRTC (USFWS 2003):

- Limit human and dog disturbance along shoreline of Lake Winyah.
- Maintain shoreline habitat where species is documented.

Hine's Emerald Dragonfly
Photo by USFWS

Hine's emerald dragonfly: Hine's emerald dragonflies are primarily found in the calcareous fens in the eastern portion of Alpena County, including an area approximately 10 miles east of Alpena CRTC. This species has not been documented at Alpena CRTC and there are no calcareous fens on site; however, there are fens adjacent to the installation (Kelley et al. 2009). Additionally, Hine's emerald dragonflies can be found in a variety of wetland habitats and may occur as transients at Alpena CRTC. The following management strategies are recommended, if documented on Alpena CRTC (Cuthrell 1999):

- Maintain water quality in existing wetland areas.
- Do not allow off-road vehicle access in wetland areas.

Dwarf Lake Iris
Photo by USFWS

Dwarf lake iris: The abundance of dwarf lake iris is greatest in Alpena, Cheboygan, and Emmet Counties, where it occurs almost continuously for many miles along the lakeshore (Penskar et al. 2001). The following management strategies are recommended, if documented on Alpena CRTC (Penskar et al. 2001):

- Limit disturbance along shoreline of Lake Winyah.
- Reduce shading by removing some canopy trees near stands.
- Where dwarf lake iris are found, flag or add signage to mark presence of a protected plant species, when possible.
- Support monitoring for invasive species (e.g., garlic mustard) that may compete with dwarf lake iris.

Eastern Massasauga
Photo by USFWS

Eastern Massasauga: During the winter months, this eastern massasauga occupies hibernacula that typically include existing features, such as crayfish burrows or small mammal burrows, with consistent hydrology to support over-winter survival. In Michigan, they are typically active from late April to late September. The USFWS has identified areas of high suitability for eastern massasauga, known as Tier 1 (known or presumed occupied) and Tier 2 (high potential) habitat. The northern boundary of the Alpena CRTC contains Tier 2 habitat, and the eastern unit is within 500 meters of Tier 2 habitat. The Grayling GSU is approximately 1.5 kilometers from Tier 2 habitat. Although habitat suitable for the eastern massasauga is known to occur adjacent to Alpena CRTC, this species has not been documented at the installation and may be difficult to detect due to small population size (Kelley et al. 2009). The eastern massasauga is state listed and federally protected and is therefore a priority species for Alpena CRTC. The following management strategies are recommended by the USFWS, if the species is found on Alpena CRTC (Johnson 1995):

- Where possible, conduct surveys during the spring egress when the probability of detection is highest.
- Limit disturbance of prairie, wetland, and woodland ecosystems.
- Prevent woody vegetation encroachment in wetland areas.
- Minimize barriers that could prevent snake movement between Alpena CRTC and neighboring properties.
- Maintain water levels during hibernation periods.
- Identify and protect hibernacula and potential hibernacula locations.
- Activities involving hibernacula should be scheduled to avoid the time period when in use by the eastern massasauga. If possible, hibernacula should be protected and not disturbed or altered, as conservation of these areas is important for survival.
- Where feasible, use wildlife-safe materials for erosion control and site restoration.

Northern Long-Eared Bat
Photo by USFWS

Northern long-eared bat: Northern long-eared bats have not been documented on Alpena CRTC however they may have been visually detected foraging over the South Branch Thunder Bay River on the western boundary of Alpena CRTC (Kelley et al. 2009). The following management strategies are recommended, if documented on Alpena CRTC:

- Protect large diameter snags in early to medium stages of decay where they do not pose a safety hazard.
- Maintain living and dead trees in adjacent forested areas, particularly those with loose bark.
- Maintain forests and riparian corridors.
- Reduce the use of pesticides in potential bat foraging areas.
- Maintain vegetation and reduce bank erosion to surface water features which serve as critical foraging areas.


Pitcher's thistle
Photo by USDA-FS

Pitcher's thistle: Pitcher's thistle have not been documented on Alpena CRTC though they are believed to occur in Alpena County, Michigan. The following management strategies are recommended (USFWS 2018a):

- Implement stormwater management measures as appropriate to maintain water quality.
- Limit disturbance to habitat.


Red knot
Photo by USFWS

Red Knot: Red knots have not been documented on Alpena CRTC though they are believed to occur in Alpena County, Michigan. The following management strategies are recommended (USFWS 2018b):

- Implement stormwater management measures as appropriate to maintain water quality.
- Limit disturbance to nesting and foraging habitats.


Bald Eagle
Photo by USFWS

Bald Eagle: Bald eagles are protected under the BGEPA. Bald eagles are known to nest near Alpena CRTC and individuals may use the installation in a transient manner or for foraging. The following management strategies are recommended:

- Encounters with bald eagles should be avoided, both within the vicinity of a nest and as part of BASH risk reduction activities.
- Modifications to aerial structures and electrical transmission lines should incorporate proven design techniques that discourage bald eagle use, and eliminate or reduce bald eagle hazards.
- Limit use of pesticides as described in the IPM Plan, in order to limit indirect impacts to eagles.
- Limited activity near active nests.

7.2.3.2 State Special Status Species

Michigan state law provides for the protection of native threatened and endangered species (Part 365 of PA 451, 1994 Michigan NREPA). There are 8 state listed priority species, in addition to those species already discussed above under federally listed species. These species for Alpena CRTC and their management strategies are listed below.


Pugnose Shiner
Photo by WDNR

Pugnose shiner: Although the pugnose shiner is known to occur in Alpena County and the Thunder Bay River, it is not likely to occur on Alpena CRTC (Kelley et al. 2009). However, water from Alpena CRTC enters the Lower South Branch Thunder Bay River so activities on the facility could potentially impact this fish. The following management strategies are recommended (Derosier 2004):

- Ensure stormwater management measures are used and functioning properly to prevent increased turbidity or decreased water quality in the Lower South Branch Thunder Bay River.
- Do not disturb submerged aquatic or emergent vegetation in the Lower South Branch Thunder Bay River.
- Maintain vegetated buffer along the river banks and minimize bank erosion.

Red-shouldered hawk: Red-shouldered hawks were documented in the vicinity of Alpena CRTC in 2008 (Kelley et al. 2009). While these birds are often observed soaring over Alpena CRTC, no nests have been documented on site. The following management strategies are recommended if the species is documented nesting on site (Urquhart and Postupalsky 2011, Cooper 1999):

- Maintain contiguous tracks of forest with few openings and 70% canopy cover.
- Do not conduct tree removal from February through August in areas where nesting may occur.

Red-Shouldered Hawk
Photo by USFWS

Common loon: Breeding common loons were observed in the vicinity of Alpena CRTC in 2008 (Kelley et al. 2009). The following management strategies are recommended if the species is documented on site (Gibson 2007):

- Maintain the shoreline along Lake Winyah.
- Implement stormwater management measures as appropriate to maintain water quality.

Common Loon
Photo by USFWS

Common tern: Common terns have historically been seen in the vicinity of Alpena CRTC (Kelly et al. 2009). The following management strategies are recommended if the species is documented on site (MNFI 2018):

- Implement stormwater management measures as appropriate to maintain water quality.
- Limit disturbance to nesting and foraging habitats.

Common Tern
Photo by USFWS

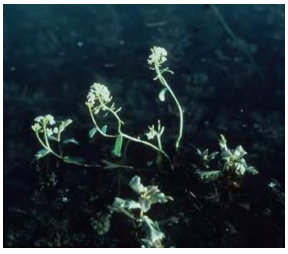
Caspian tern: Caspian terns were documented in the vicinity of Alpena CRTC in 2008 (Kelley et al. 2009, MIANG 2016a) with individuals typically found along the river and lakeshore. The following management strategies are recommended if the species is documented on-site (Seefelt 2011, Hyde 1996):

- Implement stormwater management measures as appropriate to maintain water quality.
- Maintain shoreline vegetation and minimize bank erosion.

Caspian Tern
Photo by USFWS

Lake cress: Lake cress was last documented in Alpena County in 1984. However, as it is known to occur in emergent marsh habitat and in the littoral zones of inland lakes, there is potential for this species to occur at Alpena CRTC. The following management strategies for lake cress are recommended if the species is documented on site (Penskar and Crispin 2010):

- Implement stormwater management measures to maintain water quality.



Lake Cress
Photo by WDNR

Walking fern: The population of walking fern in Alpena County is a disjunct population and has been documented from a sinkhole in Alpena County (Penskar and Higman 1997). The sinkhole on Alpena CRTC therefore provides potential habitat. The following management strategies for walking fern are recommended:

- Limit disturbance to the ponds and sinkhole as well as the grassy margins.
- Maintenance of a partial canopy to perpetuate the moist moss mats that provide the necessary microhabitat for this species.

Walking fern
Photo by MNFI

Pine-drops: While pine-drops have not been documented at Alpena CRTC, dry-mesic forest habitat along the shore of Lake Winyah may provide suitable habitat for this species. The following management strategies are recommended (Higman and Penskar 1999), if the species is documented on site:

- Maintain mycorrhizal associations and soil microbes.
- Maintain forest habitat.

Pine-Drops
Photo by MNFI

7.2.3.4 Management Strategies for Special Status Species

The following general guidelines will be followed to facilitate the military mission and natural resources management objectives while minimizing BASH risk, and negative impacts on special status species and their habitats.

- Continue supporting BASH program to minimize take of listed species.
- Update biological inventories regularly as the occurrence of listed species is subject to change over time as a result of either recruitment, responses to management activities, identification of additional protected species, or the change in status of species currently present at Alpena CRTC.

7.3 Water and Wetland Resource Protection

In general, water resources will be managed through conservation and impact avoidance. The following guidelines will be implemented to ensure compliance and to protect and enhance water resources at Alpena CRTC.

- Consult with the EM prior to initiating projects with the potential to disturb water resources.
- Apply for an appropriate permit when regulated waters, including wetlands and associated buffers, will be impacted.
- Do not allow vehicles within known wetland areas, shoreland areas, and other water resources except where established crossings and roads exist.
- Restrict vehicles from within 30 feet of water resources except where established crossings and roads exist.
- Maintain RMZs around water resources, including at least 100 foot vegetated buffer along the Lower South Branch Thunder Bay River and Lake Winyah.
- Implement management controls to limit unavoidable erosion with the RMZs.
- Avoid disturbance of wetlands and aquatic habitats where practicable.
- Manage invasive species to promote desirable native species.
- Plan development to avoid wetland and floodplain impacts to the maximum extent possible and mitigate unavoidable impacts on wetland and floodplain functions.

- Review operations and maintenance programs that potentially affect water resources, and develop procedures and guidelines to avoid the loss of function.
- Do not enhance wetlands in the Airport Operating Area (AOA) and ensure any mitigation occurs outside the AOA.

7.3.1 Regulatory and Permitting

The US Army Corps of Engineers (USACE) regulates the discharge of dredged or fill material into Waters of the US, including wetlands, under Section 404 of the Clean Water Act (CWA). Even an inadvertent encroachment into Waters of the US resulting in a displacement or movement of soil or fill material has the potential to be viewed as a violation of the CWA if an appropriate permit has not been issued by the USACE. Waters of the US are defined under 33 CFR Part 328.3(a) and referred to as Jurisdictional Waters. Jurisdictional Waters may include coastal and inland waters, lakes, rivers, ponds, streams, intermittent streams, vernal pools, wetlands, and other waters, that if degraded or destroyed could affect interstate commerce.

A jurisdictional determination is made based on multiple criteria, but the relationship of the wetland to other waters of the US is important. Management of wetlands on federal lands and military installations is further governed by EO 11990 and DoDI 4715.03, respectively. Under those instructions, wetlands are required to be managed for no net loss on federal lands, including military installations. In support of these policies, long- and short-term adverse impacts associated with the destruction or modification of wetlands and support of new construction in wetlands must be avoided to the maximum extent possible.

According to the USEPA regulations issued under Section 404(b)(1) of the CWA, permitting of fill activities will not be approved unless the following conditions are met: no practicable, less environmentally damaging alternative to the action exists; the activity does not cause or contribute to violations of state water quality standards (or compliance under Section 401 of the CWA); the activity does not jeopardize listed species or sensitive cultural resources (33 CFR Part 320.3 [e] and [g]); the activity does not contribute to significant degradation of Waters of the US; and all practicable and appropriate steps have been taken to minimize potential adverse impacts to the aquatic ecosystem (40 CFR Part 230.10).

In 1984 Michigan received authorization from the federal government to administer Section 404 of the CWA in most areas of the state. In accordance with the CWA, Section 404(g), the USACE retains federal jurisdiction over traditionally navigable waters including the Great Lakes, connecting channels, other waters connected to the Great Lakes where navigational conditions are maintained, and wetlands directly adjacent to these waters. Federal oversight of state-administered 404 programs is the responsibility of the USEPA. The 1983 Memorandums of Agreement (MOA) between USEPA Region 5 and MDEQ outlines the procedures to be followed. This agreement waives federal review of the vast majority of applications in areas under Michigan's 404 jurisdiction. However, federal agencies must review projects which impact critical environmental areas, or which involve large quantities of fill. If the MDEQ determines that an application under Michigan's 404 program is subject to federal review, copies of the public notice are sent to USEPA Region 5, USACE Detroit District, and the USFWS. The USEPA is responsible for compiling all federal comments and submitting comments on the federal position to the MDEQ.

Wetlands are protected in Michigan under Section 404 of the CWA as well as the Temoar-Anderson Wetlands Protection Act, 1979 PA 203, which is now Part 303 (Wetlands Protection) of the Michigan NREPA. Wetlands are regulated in Michigan when 1) they are connected to or within 1,000 feet of one of the Great Lakes or Lake St. Clair; 2) connected to or within 500 feet of an inland lake, pond, river, or stream; 3) not connected to one of the Great Lakes or Lake St. Clair, or an inland lake, pond, stream, or river, but are more than 5 acres in size; or 4) not connected to one of the Great Lakes or Lake St. Clair, or an inland lake, pond, stream, or river, and less than 5 acres in size, but the MDEQ has determined that these wetlands are essential to the preservation of the state's natural resources and has notified the property owner.

For an area to be classified as a delineated wetland, prior to determining jurisdictional status, three conditions must be present: (1) wetland hydrology; (2) hydric soil; and (3) hydrophytic vegetation. Areas that may be periodically wet, but that do not meet all 3 criteria, are not classified as delineated wetlands. Furthermore, the MDEQ Rapid Assessment Method for Wetlands (MiRAM; http://www.michigan.gov/deq/0,4561,7-135-3313_3687-240071--,00.html) is a tool to determine the functional value of a particular delineated wetland and to assign a rating level to that wetland as compared to other wetlands. MiRAM offers a relatively rapid assessment of wetland functions and values, but it is not intended to modify the existing regulatory process in Michigan or replace more detailed quantitative measures of ecosystem function, such as Indices of Biological Integrity, Floristic Quality Assessment or other detailed ecological studies.

The following activities within regulated wetlands require a permit in Michigan: placing fill material in a wetland; dredging or removal of soil or minerals from a wetland; construction, operation, or maintenance of any use or development in a wetland; and draining surface water from a wetland. Because MDEQ administers the Section 404 program, applicants in Michigan generally submit only 1 wetland permit application to the MDEQ, unlike other states where an applicant must also apply to the USACE.

Permitting

As discussed above, the state administers Section 404 of the CWA in most areas of the state. A joint permit application was established to facilitate the state and federal permit process administered by MDEQ and USACE. This multi-purpose application is used for activities in the Great Lakes, inland lakes and streams, wetlands, floodplains, dams, high risk erosion areas, and critical dune areas that are regulated under Parts 325, 301, 303, 315, 323 and 325 of the Michigan NREPA, as well as Section 404 of the CWA and Section 10 of the Rivers and Harbors Act of 1899. The application is submitted to the regional MDEQ Land/Water Management District office. MDEQ will review the application and determine whether a permit application requires joint state and federal review, and when appropriate, will forward these permit applications to the USACE Detroit office for review. MDEQ issues general permits, minor project permits, and individual permits.

7.3.2 Riparian Management Zones

As a result of the extensive shorelines on the Lower South Branch Thunder Bay River and Lake Winyah adjacent to Alpena CRTC, the MIANG will maintain RMZs around all water resources, whenever possible, to reduce the influx of sedimentation and other materials into the water resources in compliance with the CWA and in support of the watershed plans for Thunder Bay

River (NEMCOG 2002, 2004). RMZs are sometimes also referred to as vegetation buffers, buffer strips, filter strips, or streamside management areas.

RMZ buffers can take many forms and may vary depending on the upland land use and the type of water resource being protected. Vegetation buffers can either be grassland or forest and may or may not be mowed and maintained occasionally. One of the primary purposes of a RMZ is for water quality protection by providing vegetation to interrupt water flow and to trap and filter out suspended sediments, nutrients, chemicals, and other polluting agents before they reach the body of water. RMZs should be maintained along all perennial and intermittent streams, lakes, or ponds where nearby management activities result in surface/soil disturbance, earth changes, and where erosion and sediment transport occur during rain events. In general, the standard RMZ width in Michigan is 100 feet (MDNR 2009) and RMZs less than 30 feet are generally ineffective. For more discussion on RMZs, see the *Sustainable Soil and Water Quality Practices on Forest Land* (MDNR 2009).

7.4 Grounds Maintenance

Given that large parts of Alpena CRTC are landscaped, the management and design of those areas has significant implications for water quality, BASH risk, and native species. The following recommended landscaping practices should benefit the environment and generate long-term cost and maintenance time savings. In particular, the use of native plants not only protects biodiversity and provides wildlife habitat, but it can also reduce demands for fertilizer, pesticides, and irrigation and their associated costs.

General recommendations to promote environmentally beneficial landscaping include:

- Design landscaping to be suitable to the specific site and appropriate for the use and operation of the facility.
- Minimize use of water by planting drought-tolerant and low water use native plants for landscaping.
- Implement water-efficient practices, use efficient irrigation systems and recycled water, and use landscaping to conserve energy.
- Limit turf areas where practical to reduce water use and maintenance requirements.
- Prevent expansion of nonnative plants into native plant areas by using regionally native plants for landscaping where practicable.
- Reuse landscape trimmings (e.g. mulch) on site as appropriate.
- Use porous pavement when possible to support water infiltration.
- Do not use seed-bearing or fruiting plants that provide food for wildlife and wildlife habitat.
- When possible, use wildlife-safe erosion control materials.

All plants listed as invasive species or are on the Prohibited Species List are not acceptable for landscaping planting within Alpena CRTC; both databases are available at (https://www.michigan.gov/invasives/0,5664,7-324-68002_71240---,00.html) and (https://www.michigan.gov/invasives/0,5664,7-324-68002_74282---,00.html).
All non-native grasses (except those used for lawns) are also not acceptable for landscape planting. Suitable native grass/grass-like species can be found at (http://nativeplants.msu.edu/).

In addition to these more general landscaping practices, the installation of rain gardens on Alpena CRTC would be beneficial for managing stormwater on site and for improving water quality in adjacent water bodies where practical and/or applicable. In Michigan, rain gardens are generally placed strategically to capture stormwater from impervious services (e.g. parking lots) and typically are bowl shaped depressions filled with organic matter and native plants. These depressions then improve the water quality of the stormwater runoff, while allowing for slow infiltration into the ground water. For more information on rain gardens and their design, refer to: (http://www.raingardens.org).

7.5 Forest Management

Alpena CRTC has a significant amount of forest with diverse tree species which provide potential habitat for many plant and wildlife species. In addition, much of the area to the west and south of Alpena CRTC is part of the state forest system in the Atlanta unit of the Mackinaw State Forest. This includes some special conservation areas (e.g. old growth) just west of Thunder Bay River and Alpena CRTC. Based on the recommendations for these nearby forests and the various uses of Alpena CRTC, the following forest management strategies are used:

- Avoid tree clearing April 15–September 15 due to nesting migratory birds.
- Acceptable forest stands are any combination of oak, aspen, maple, ash, spruce, balsam fir or white pine.
- Avoid cutting red pine, white pine, oak, cedar, or hemlock, when possible.
- Buffer drainages and wet areas.

Forest pests can also cause significant management issues; some are native species and some are not. Currently, there are no known forest pests present on Alpena CRTC. For more information on forest pests in Michigan, refer to (https://www.michigan.gov/dnr/0,4570,7-350-79136_79237_81077---,00.html). Alpena CRTC will consult MDNR foresters if forest pests require treatment or preventive measures.

7.6 Wildland Fire Management

Alpena CRTC and Grayling GSU are situated in heavily forested regions, and therefore consequently at risk from forest fires. Michigan State Forest Fire Law designates the authority of the DNR and determines permit conditions and prohibited activities with respect to forest fires (https://www.michigan.gov/dnr/0,4570,7-350-79136_79237_80917---,00.html).

The Grayling Range 40 Complex is under the control of Camp Grayling (Army). Camp Grayling is responsible for wildland fire management (including plans, program management, equipment, and funding) for the entire Camp including the Range 40 Complex.

7.7 Soil Conservation and Sediment Management

Two main types of soil erosion exist: wind erosion and water erosion. Wind erosion is not a significant issue at Alpena CRTC. Several factors affect water erosion including rainfall, slope steepness and length, soil texture or erodibility, cover protecting the soil, and special practices such as terracing or planting on the contour. Sediment resulting from erosion affects surface water quality and aquatic organisms. Erosion can be a significant management concern at Alpena CRTC along its boundary with Lake Winyah and Thunder Bay River but it is not a significant concern on the rest of the installation.

Stormwater runoff is produced when rainfall during a storm exceeds the infiltration capacity of the soil or encounters an impervious surface. Stormwater runoff can be a significant source of pollutants as well as sediments to surface waters, especially in areas with impervious surface cover or where groundcover has been disturbed. Sources of stormwater runoff and pollution could originate from operational, maintenance, and/or administrative areas within Alpena CRTC (MIANG 2010). Additionally, stormwater runoff from impervious surfaces has a high potential to carry pollutants into wetlands, surface waters, and groundwater. Impervious surfaces at Alpena CRTC include roads, parking lots, taxiways, sidewalks, and buildings.

Although water quality monitoring is not required, to protect water quality the MIANG already implements the following strategies:

- Maintain vegetation buffers around water resources.
- Adhere to Best Management Practices (BMPs) for construction and industrial activities as described in applicable manuals, plans, and permits.
- Minimize the amount of impervious surfaces in newly developed areas.
- Minimize the use of pesticides.
- Revegetate barren ground.
- Monitor surface water quality.

7.8 Outdoor Recreation, Public Access, and Public Outreach

Due to security and/or safety measures, there is currently no unsupervised public access or individual public access programs for outdoor recreation or otherwise at Alpena CRTC. The Morale, Welfare, and Recreation (MWR) program is available to visiting units and base personnel. Equipment from MRW includes fishing poles, kayaks, paddle boats, row boats, canoes, bikes, golf clubs, and sports equipment to use at the baseball diamond, tennis court, volleyball court, and the open recreation field. A walking path is currently under construction for future use.

Alpena CRTC has a structured public outreach program which includes STARBASE and the National Guard ChalleNGe. Other outreach activities occur sporadically, including visits from school groups. However, few of these activities are specific to natural resources or environmental issues at Alpena CRTC, but are more focused on the military mission. STARBASE is a DoD youth program designed to raise the interest and improve the knowledge and skills of at-risk youth about science, technology, engineering, and math through a hands-on program at military installations throughout the US. The National Guard Youth ChalleNGe Program is designed to intervene in and reclaim the lives of 16-18 year old high school dropouts, producing program graduates with the values, life skills, education, and self-discipline necessary to succeed as productive citizens. Additionally, youth programs associated with Alpena CRTC have expanded to include Reserve Officer Training Corps, Junior Reserve Officer Training Corps, Civil Air Patrol, Boy/Girl Scouts of America, Freedom Academy Students, and Michigan Youth Camp Cadets.

7.9 Geographic Information Systems (GIS)

GIS is used to manage and catalog information acquired in natural resources research. GIS assists in planning by charting areas of environmental concern and providing a baseline for analyzing the

potential impacts of any proposed natural resources management action. Managers can implement the capabilities of a GIS to watershed, wetlands, wildlife, and various other natural resource management applications. GIS needs and requirements will be addressed through the ANG GeoBase Program.

7.10 Other Plans

7.10.1 Integrated Pest Management Plan

Alpena CRTC has an IPM Program implemented by the Alpena CRTC IPM Plan (ANGRC 2017). IPM is the use of multiple techniques in a compatible manner to avoid damage and minimize adverse environmental affects while obtaining control of target pests. The goal of IPM is to utilize non-chemical procedures to control pests, including invasive, exotic plant and animal species. Typically, a combination of the following IPM techniques is required to resolve a problem on a sustained basis:

- Mechanical control, which alters environments in which pests live, traps or removes pests (e.g. glue boards and live-traps) from where they are not wanted or excludes pests from where they are not wanted (e.g. screening, fencing).
- Cultural control, which manipulates environmental conditions to suppress or eliminate pests (e.g. removal of food scraps or spreading manure on fields).
- Biological control, which uses predators, parasites, or disease organisms to control pests.
- Chemical control, which relies on pesticides to kill pests and/or undesirable species of plants.

The IPM Plan includes pest identification and management requirements, outlines the resources necessary for surveillance and control, and describes the administrative, safety, and environmental requirements of the program. This plan serves as a tool to reduce pesticide use, enhance environmental protection, and maximize the use of IPM techniques safely. It is the policy of the MIANG to minimize the use of all pesticides at the installation.

7.10.2 Invasive Species

A non-native plant survey was conducted at Alpena CRTC in conjunction with wildlife surveys (Kelley et al. 2009). In general, Alpena CRTC does not have any large populations of invasive species so no priority invasive species have been identified at this time. **Table 10** presents non-native, invasive species that have been documented on Alpena CRTC. Species profiles for invasive plants written by the Michigan Invasive Species Information Network (MISIN) can be found at https://www.michigan.gov/invasives.

Table 10. Documented Non-Native Species at Alpena CRTC	
Scientific name	**Common name**
Plant Species	
Phalaris arundinacea	reed canarygrass
Typha angustifolia	narrow-leaved cattail
Wildlife Species	
Sus scrofa	feral hog
Molothrus ater	brown-headed cowbirds
Cygnus olor	mute swan
Sources: Kelley et al. 2009, ANG 2013, MISIN 2018	

Management Strategies

Invasive, non-native species and noxious weeds can significantly affect native vegetation and wildlife. A key element of INRMP implementation is to ensure no net loss of military training capability. Management of undesirable species is necessary to maintain military lands and facilities in usable condition. In addition, uncontrolled animal pests can become health hazards, which could threaten the military mission.

The task of controlling invasive and exotic species and noxious weeds is often expensive, lengthy, and risky because total eradication is required to prevent reestablishment. Prevention is the best approach. However, in accordance with laws and regulations pertaining to the management of these species, the MIANG will work to both prevent the introduction of these species and take measures to control them in an economically and environmentally sound manner. General management strategies are as follows:

- Implement BMPs to minimize land disturbances that favor invasion of non-native species and re-vegetate disturbed areas with native species.
- Native rock material should be used instead of non-indigenous rock, when practical, for maintenance or construction projects.
- Utilize mulch from Alpena CRTC or certified-weed free sources to facilitate the establishment of native ground cover on impoverished soils.
- Maintain biodiversity and undisturbed habitat to maximize resilience to and competition with invasive species.
- Control invasive and exotic species and noxious weeds through early detection, isolation of infested areas, and control of individual plants with physical, chemical or mechanical means, depending on the species.
- Favor basal application and spot treatment and avoid aerial or broadcast application of pesticides to prevent adverse impacts to native plants and wildlife.
- Do not use invasive, non-native species in landscaping.
- Continue to reseed exposed soils using a certified weed-free native grass mix.
- Education of users, maintenance staff, and others as relevant.

The use of chemicals to control invasive and exotic species can hinder an installation's efforts to reduce usage of pesticides. Therefore, it is important to prevent the initial spread of invasive and exotic species and address the spread of such species as early as possible. Alpena CRTC's EM should evaluate the threat of invasive species, environmental impacts, and permitting

requirements of pesticide usage (if applicable) prior to implementing any eradication and/or control program.

7.10.3 Stormwater Management

Stormwater management is important at Alpena CRTC, given the extent of development and nearness to Lake Winyah and Thunder Bay River and the potentially significant affects from erosion on their shorelines. General stormwater guidelines and current BMPs are presented in the Storm Water Pollution Prevention Plan (SWPPP) held by the adjoining Alpena County Regional Airport (APN 2018). Currently, there are no point sources (e.g. outfalls) where stormwater exits the facility, as most stormwater enters into infiltration structures. Stormwater from areas with industrial-type activities passes through stormwater infiltration structures. Stormwater from areas without industrial-type activities (e.g. wooded areas) does occasionally flow overland or into drainage ditches before entering Thunder Bay River or Lake Winyah.

The Guidebook of Best Management Practices for Michigan Watersheds (Peterson et al. 1998) provides a source for stormwater BMPs and there is also the *Low Impact Development Manual for Michigan* (SEMCOG 2008), which outlines technical details of BMPs but also provides a larger scope of managing stormwater through policy. The MDNR and MDEQ also developed the *Sustainable Soil and Water Quality Practices on Forest Land* (MDNR 2009), which describes BMPs in the context of those practices that not only protect surface water quality, but soil quality. In addition to compliance with requirements associated with existing SWPPP activities, construction or other land-disturbing activity within 500 feet of a lake or stream and/or creates a minimum of 1-acre of soil disturbance must be permitted by the MDEQ under the National Pollution Discharge Elimination System (NPDES) permit program. The NPDES permit establishes the required erosion control and revegetation standards.

7.10.4 Bird/Wildlife Aircraft Strike Hazard (BASH)

As users of the APN runways, the MIANG implements a BASH Plan (MIANG 2016a) and supports implementation of the APN's Wildlife Hazard Management Plan (WHMP; APN 2008). The BASH Plan has established specific procedures intended to reduce known and future hazards from birds, including the development of a BHWG. The BHWG is a part of the Airfield Operations Board (AOB), which is chaired by the Director of Operations. The Safety Office is responsible for developing, implementing, and updating the BASH Plan and reviewing BASH incidents. The EM also participates in the AOB.

In general, most bird strikes at Alpena CRTC occur in the spring and fall, with a lull in late summer. There are many surface water features in the area surrounding Alpena CRTC that represent habitat to waterfowl that also feed on the installation's manicured grass and landscaped vegetation. Other local features in the areas around the airport, including forests and wetlands, also serve as habitat for numerous wildlife species. The Grayling GSU does not contain habitat or land uses unique to the area that would concentrate birds above background levels; birds move through the area of the range just as they would the surrounding landscape (MIANG 2016a).The wildlife considered most hazardous at APN and Alpena CRTC are the following (USDA 2004):

- Critical: ducks, gulls, crows.
- High: eagles, geese, cranes, hawks, herons, kestrels, blackbirds, starlings, cormorants, snow buntings.

- Moderate: deer, vultures, osprey, coyotes, mourning doves, owls, shorebirds, swans.

In particular, birds can be encountered up to altitudes of 30,000 feet and higher. However, most birds fly closer to ground level, and more than 95% of all reported incidents in which an USAF aircraft has struck a bird have been at altitudes below 3,000 feet. Approximately half of these bird strikes occur in an airfield environment. Strike rates rise significantly as altitude decreases, which is partly due to the greater number of low-altitude missions, but mostly because birds are commonly active nearer to the ground. Any gain in altitude represents a substantially reduced threat of a bird-aircraft strike. Wildlife management and control measures include a number of dispersal methods available to MIANG and airport personal on an as-needed basis. Active harassment activities include a combination of frightening devices that are used whenever birds are present on the airfield or in the surrounding area. In addition to active harassment, BASH management techniques include rodent control and depredation.

The potential exists for future bird strikes at Alpena CRTC if current BASH plan management strategies and protocols are not implemented. These strategies include:

- Maintaining uniform grass height between 7 – 14 inches on the airfield.
- Controlling broad leaved weeds.
- Planting areas of bare ground with grass.
- Minimizing habitat edges, or transitions (ecotones), on the airfield.
- Removing dead vegetation and animals.
- Controlling pests, particularly those that attract predators/raptors.
- Maintaining drainage ditches and eliminating standing water.
- Maintaining fencing.
- Using appropriate vegetation for erosion control.
- Eliminating roosting areas.
- Bird-proofing buildings and other structures.

For more information regarding BASH management at Alpena CRTC, refer to the Wildlife Hazard Assessment for APN (USDA 2004), WHMP for APN (APN 2008), and the MIANG BASH Plan (MIANG 2016a).

7.10.5 Wildlife Hazard Management Plan for Alpena County Regional Airport

APN's WHMP establishes the responsibilities, policies, resources, and procedures that will reduce the airport's wildlife hazards. This plan includes discussions on management actions, control measures, laws and regulations, resources, and training (APN 2008).

7.10.6 Watershed Plans for Thunder Bay River

Michigan's Watershed Plans for Thunder Bay River summarizes known pollutants and the plan to address them (NEMCOG 2002, 2004).

7.10.7 Michigan's Wildlife Action Plan

Michigan's Wildlife Action Plan (https://www.michigan.gov/dnr/0,4570,7-350-79136_79608_83053---,00.html) provides a common strategic framework that enables Michigan's conservation partners to jointly implement a long-term holistic approach for the

conservation of all wildlife species. This includes a habitat-based framework for management of wildlife, recommends actions for Species of Greatest Conservation Need (SGCN) and to keep common species common, and prioritizes conservation actions and needs.

8.0 MANAGEMENT GOALS AND OBJECTIVES

Goals and objectives provide the framework for natural resources management programs. Goals provide a general guiding direction for each technical area and objectives are more specific actions that facilitate achieving those goals. The objectives then drive the development of specific activities and projects to achieve those objectives. Management goals and objectives for Alpena CRTC INRMP were developed through a thorough evaluation of the natural resources present in accordance with AFI 32-7064 and the principles of adaptive ecosystem management by an interdisciplinary team of biologists, planners, and environmental scientists. Goals and objectives should be revised over time to reflect evolving environmental conditions, adaptive management, and the completion of tasks as the INRMP is implemented.

GOAL – Natural Resources Program Management (PM): Manage natural resources in a manner that is compatible with and supports the military mission while complying with applicable federal and state laws, and USAF regulations and policies.

- OBJECTIVE PM1: Coordinate an annual review of the INRMP with USFWS and MDNR, and modify and monitor the progress of goals and objectives. Update and document with the ANG.
- OBJECTIVE PM2: Initiate and/or continue programs and projects that enhance the training land and training opportunities and result in no net loss of training land availability.
- OBJECTIVE PM3: Use adaptive, ecosystem management as the primary natural resources management paradigm. Ensure the INRMP is integrated with other plans such as the IPM Plan and BASH.
- OBJECTIVE PM4: Continue internal environmental awareness activities to minimize impacts to natural resources from MIANG and visiting personnel.
- OBJECTIVE PM5: Continue to cooperate with other agencies and local landowners on regional land and natural resources management.
- OBJECTIVE PM6: Ensure the annual budget is prepared and implement for the following fiscal year's activities.

GOAL – Soil Conservation and Sediment Management (SO): Manage soil to minimize sediment loss and erosion, while protecting water quality.

- OBJECTIVE SO1: Manage shorelines on South Branch Thunder Bay River and Lake Winyah to minimize erosion and sediment loss.
- OBJECTIVE SO2: Manage stormwater runoff in order to reduce erosion, encourage infiltration upstream of major water bodies, and reduce nutrients before runoff enters major water bodies.
- OBJECTIVE SO3: Minimize nonpoint source pollution through implementation of BMPs, following existing spill prevention and hazardous materials management protocols, and education.
- OBJECTIVE SO4: Maintain riparian management zones around water resources.

GOAL – Water Resource Protection (WA): Manage water resources so they remain resilient and with no net loss of acreage or functions and values.

- OBJECTIVE WA1: Minimize impacts to water resources and comply with all laws and regulations pertaining to wetlands, streams, floodplains and regulated water bodies.
- OBJECTIVE WA2: Maintain or enhance RMZs around water resources.
- OBJECTIVE WA3: Implement management measures to reduce impacts to water quality in major water bodies.

GOAL – Vegetative Monitoring (VE): Manage vegetation to maintain native species using cost effective and sustainable methods.

- OBJECTIVE VE1: Maintain intact, healthy habitat and enhance or restore degraded habitat, without increasing BASH risk.
- OBJECTIVE VE2: Maximize native plants and avoid invasive non-native plants in landscaping and other areas.
- OBJECTIVE VE3: Maintain forested areas and ensure management does not cause impacts to nesting migratory birds.

GOAL – Fish and Wildlife Monitoring (FW): Maintain fish and wildlife populations while minimizing potential impacts to the military mission.

- OBJECTIVE FW1: Minimize BASH risk by deterring hazardous birds and other wildlife from the airfield and its critical zone.
- OBJECTIVE FW2: Maintain populations of wildlife away from the airfield on Alpena CRTC by minimizing negative impacts and by providing healthy, diverse habitat types and corridors for wildlife movement between those habitats.
- OBJECTIVE FW3: Observe the interaction of species within the existing ecosystem as it pertains to the military mission. Specifically, this includes monitoring avian surveys (for BASH), bat surveys, and any invasive/non-native wildlife surveys.

GOAL – Threatened and Endangered Species (TE): Manage rare species using an ecosystem approach, while maintaining the military mission at Alpena CRTC.

- OBJECTIVE TE1: Manage rare water-dependent species by protecting the shorelines of, and water quality in, the Lower South Branch Thunder Bay River and Lake Winyah.
- OBJECTIVE TE2: Manage rare forest-dependent species by using sustainable forestry practices and avoiding tree removal during nesting periods.

GOAL – Invasive Species (IN): Minimize impacts of invasive and pest species, while minimizing use of chemicals to manage those species, utilizing an IPM approach.

- OBJECTIVE IN1: Prevent the spread of invasive aquatic species by ensuring all equipment is clean before and after use in water bodies.
- OBJECTIVE IN2: Manage terrestrial invasive species by maintaining existing native vegetation, monitoring invasive species density and spread, and implementing control efforts when needed.

9.0 ANNUAL WORK PLANS

The INRMP Annual Work Plans contain projects listed by fiscal year (FY). For each project, a specific timeframe for implementation is provided (as applicable), as well as priority for implementation (**Tables 11-14**). Priorities are defined as follows:

- High: The INRMP signatories assert that if the project is not funded the INRMP is not being implemented and the Air Force is non-compliant with the Sikes Act; or that it is specifically tied to an INRMP goal and objective and is part of a "Benefit of the Species" determination necessary for ESA Sec 4(a)(3)(B)(i) critical habitat exemption. Information concerning the implementation of the ESA can be found in **Sections 2.3.1** and **10.1.5**.
- Medium: Project supports a specific INRMP goal and objective and is deemed by INRMP signatories to be important for preventing non-compliance with a specific requirement within a natural resources law or by EO 13112 on Invasive Species. However, the INRMP signatories would not contend that the INRMP is not be implemented if not accomplished within programmed year due to other priorities.
- Low: Project supports a specific INRMP goal and objective, enhances conservation resources or the integrity of the installation mission, and/or support long-term compliance with specific requirements within natural resources law; but is not directly tied to specific compliance within the proposed year of execution.

Table 11. Work Plans FY 2019		
Projects	**Completed (Date)**	**Priority Level**
Prepare budget to implement INRMP.		**High**
Complete annual review of INRMP with stakeholders.		**High**
Complete erosion and sediment control study.		**High**
Update invasive species survey.		**High**
Update flora and fauna survey.		**High**
Update wildlife surveys to include T&E species and bats.		**High**
Recertify wetland jurisdiction delineation.		**High**
Make "wash your boat signs" at the boat launch and for services. Ensure that all equipment used in water is clean before entering the water and clean when leaving the water to prevent the spread of invasive aquatic species.		**High**
Investigate perimeter fence deficiencies.		**High**
Investigate BMP for sand pile in the MOUT Area.		**Medium**
Consider natural resources (T&E, wetlands, storm water, soil erosion, etc.) during planning and evaluate impacts.		High
Continue to manage and monitor soil erosion impacts on Thunder Bay River.		High
Monitor forest stands for disease and to minimize impacts to migratory birds and roosting bats.		High
Use native plant species and materials for landscaping activities.		High
Provide environmental and natural resources information VIA E-CFT, ESOHC, training sessions and/or newsletters.		Medium
Continue to monitoring for invasive species.		Medium
Continue supporting IPMP.		Medium
Continue supporting BASH risk reduction measures modifying management strategies if BASH risk increases and/or high BASH risk species increase. MICRTC/CEV will participate in the BHWG.		Medium

Table 12. Work Plans FY 2020		
Projects	**Completed (Date)**	**Priority Level**
Prepare budget to implement INRMP.		**High**
Complete annual review of INRMP with stakeholders.		**High**
Implement/Program findings from perimeter fence investigation.		**High**
Implement/Program soil erosion project from soil erosion study.		**High**
Implement BMP for sand pile in the MOUT Area.		**Medium**
Consider natural resources (T&E, wetlands, storm water, soil erosion, etc.) during planning and evaluate impacts.		High
Continue to manage and monitor soil erosion impacts on Thunder Bay River.		High
Monitor forest stands for disease to minimize impacts to migratory birds and roosting bats.		High
Use native plant species and materials for landscaping activities.		High
Provide environmental and natural resources information VIA E-CFT, ESOHC, training sessions and/or newsletters.		Medium
Continue to monitor for invasive species.		Medium
Continue supporting IPMP.		Medium
Continue supporting BASH risk reduction measures modifying management strategies if BASH risk increases and/or high BASH risk species increase. MICRTC/CEV will participate in the BHWG.		Medium

Table 13. Work Plans FY 2021		
Projects	**Completed (Date)**	**Priority Level**
Prepare budget to implement INRMP.		**High**
Complete annual review of INRMP with stakeholders.		**High**
Update Geobase, GIS and/or AutoCADD with updated survey information.		**High**
Consider natural resources (T&E, wetlands, storm water, soil erosion, etc.) during planning and evaluate impacts.		High
Continue to manage and monitor soil erosion impacts on Thunder Bay River.		High
Monitor forest stands for disease to minimize impacts to migratory birds and roosting bats.		High
Use native plant species and materials for landscaping activities.		High
Provide environmental and natural resources information VIA E-CFT, ESOHC, training sessions and/or newsletters.		Medium
Continue to monitor for invasive species.		Medium
Continue supporting IPMP.		Medium
Continue supporting BASH risk reduction measures modifying management strategies if BASH risk increases and/or high BASH risk species increase. MICRTC/CEV will participate in the BHWG.		Medium

Table 14. Work Plans FY 2022		
Projects	**Completed (Date)**	**Priority Level**
Prepare budget to implement INRMP.		**High**
Complete annual review of INRMP with stakeholders.		**High**
Recertify wetland jurisdiction delineation.		**High**
Determine if updated surveys (T&E, invasive, bats, flora and fauna, forest) are needed.		**High**
Consider natural resources (T&E, wetlands, storm water, soil erosion, etc.) during planning and evaluate impacts.		High
Continue to manage and monitor soil erosion impacts on Thunder Bay River.		High
Monitor forest stands for disease to minimize impacts to migratory birds and roosting bats.		High
Use native plant species and materials for landscaping activities.		High
Provide environmental and natural resources information VIA E-CFT, ESOHC, training sessions and/or newsletters.		Medium
Continue to monitor for invasive species.		Medium
Continue supporting IPMP.		Medium
Continue supporting BASH risk reduction measures modifying management strategies if BASH risk increases and/or high BASH risk species increase. MICRTC/CEV will participate in the BHWG.		Medium

10.0 INRMP IMPLEMENTATION, UPDATE, AND REVISION PROCESS

10.1 INRMP Implementation

In accordance with AFI 32-7064, an INRMP is considered implemented if an installation:

- Actively requests, receives, and uses funds for "must fund" projects and activities as defined by AFI 32-7001 (Environmental Quality Programming and Budgeting).
- Executes all "must fund" projects and activities in accordance with specific time frames identified in the INRMP.
- Prepares the INRMP in cooperation with appropriate stakeholders. Notifies stakeholders when a new or revised INRMP will be prepared and solicits participation and input to the INRMP development and review process.
- Ensures that sufficient numbers of professionally trained natural resources management personnel are available to perform the tasks required by the INRMP.
- Ensures INRMP has been approved in writing by the appropriate representative from each cooperating agency within the past 5 years.
- Reviews the INRMP annually and coordinates annually with cooperating agencies.
- Establish and maintain regular communications with the appropriate federal and state agencies for the region where the installation is located.
- Documents specific INRMP action accomplishments undertaken each year.
- Ensures INRMP updates and reviews are conducted in cooperation with the USFWS, and MDNR
- Ensures the INRMP implements ecosystem management on Air Force installations by setting goals for attaining a desired land condition

Natural resource and land use management issues are not the only factors contributing to the development and implementation of the INRMP. Facility management and other seemingly unrelated issues affect implementation. It is important to the implementation of this INRMP that Alpena CRTC personnel take ownership of the INRMP to provide the necessary resources (e.g. personnel and equipment), and to utilize the appropriate funding allocated by the ANG NGB/A4AM to enact the INRMP. It is extremely important that the E-CFT continue to participate in the implementation of this INRMP. The E-CFT is made up of the key Alpena CRTC personnel, and has an oversight role to ensure the effective implementation of this INRMP. Top- and middle-level management representation, as well as representation from several individuals with day-to-day on-site experience will provide the E-CFT with the leadership and structure necessary for the successful implementation of this INRMP.

10.1.1 Monitoring INRMP Implementation

10.1.1.1 Alpena CRTC INRMP Implementation Analysis

Alpena CRTC's INRMP implementation will be monitored for meeting the legal requirements of the Sikes Act as well as for other mission and biological measures of effectiveness. The ultimate successful implementation of this INRMP is realized in no net loss in the capability of the MIANG training lands to support the military mission while at the same time providing effective natural resources management.

In order to monitor and evaluate the effectiveness of the INRMP implementation the following will be reviewed as applicable and discussed within the context of the annual review and/or a formal review of operation and effect:

- Impacts to/from the military mission.
- Conservation program budget.
- Staff requirements.
- Program and project implementation.
- Trends in species and habitat diversity as evidenced by recurring biological surveys, land use changes, and opinions of natural resource experts.
- Compliance with regulatory requirements.
- Feedback from military trainers, the USFWS, the MDNR, and others.

Some of these areas may not be looked at every year due to lack of data or pertinent information. The effectiveness of Alpena CRTC's INRMP as a mission enabling conservation tool will be decided by mutual agreement of the USFWS, the MDNR, and the ANG during annual reviews and/or reviews for operation and effect.

10.1.1.2 USAF and DoD INRMP Implementation Monitoring

The USAF uses the Defense Environmental Programs Annual Report to Congress (DEPARC) to monitor Sikes Act compliance. DEPARC is the automated system used to collect installation environmental information for reporting to DoD and Congress. Established to fulfill an annual requirement to report the status of DoD's Environmental Quality program to Congress, DEPARC collects information on enforcement actions, inspections and other performance measures for high-level reports and quarterly reviews. DEPARC also helps the USAF track fulfillment of DoD Measures of Merit requirements. The Deputy under Secretary of Defense's Updated Guidance for Implementation of the Sikes Act also includes an updated Conservation Metrics for Preparing and Implementing INRMPs section. Progress toward meeting these measures of merit is reported in the annual report to Congress.

10.1.2 Priorities and Scheduling

The Office of Management and Budget considers funding for the preparation and implementation of this INRMP, as required by the Sikes Act, to be a high priority. However, the reality is that not all of the projects and programs identified in this INRMP will receive immediate funding. Therefore, projects need to be funded consistent with timely execution to meet future deadlines. Projects are generally prioritized with respect to compliance. Highest priority projects are projects related to recurring or current compliance, and these are generally scheduled earliest. The prioritization of the projects is based on need, legal drivers, and ability to further implement the INRMP.

Current compliance includes projects and activities needed because an installation is currently or will be out of compliance if projects or activities are not implemented in the current program year. Examples include:

- Environmental analyses, monitoring, and studies required to assess and mitigate potential effects of the military mission on conservation resources.
- Planning documents.
- Baseline inventories and surveys of natural resources.
- Biological Assessments (BAs), surveys, or habitat protection for a specific listed species.

- Mitigation to meet existing regulatory permit conditions or written agreements.
- Wetland delineations in support of subsequent jurisdictional determinations.
- Efforts to achieve compliance with requirements that have deadlines that have already passed.

Maintenance requirements include those projects and activities needed that are not currently out of compliance but shall be out of compliance if projects or activities are not implemented in time to meet an established deadline beyond the current program year. Examples include:

- Compliance with future requirements that have deadlines.
- Conservation and GIS mapping to be in compliance.
- Efforts undertaken in accordance with non-deadline specific compliance requirements of leadership initiatives.
- Wetlands enhancement, in order to achieve the EO for no net loss or to achieve enhancement of existing degraded wetlands.
- Public education programs that explain the importance of protecting natural resources.

Lower priority projects include those that enhance conservation resources of the installation mission or are needed to address overall environmental goals and objectives, but are not specifically required under regulation or EO and are not of an immediate nature. These projects are generally funded after those of higher priority are funded. Examples include:

- Community outreach activities, such as Earth Day.
- Educational and public awareness projects, such as interpretive displays, oral histories, nature trails, wildlife checklists, and conservation teaching materials.
- BAs, biological surveys, or habitat protection for a non-listed species.
- Restoration or enhancement of natural resources when no specific compliance requirement dictates a course or timing of action.
- Management and execution of volunteer and partnership programs.

10.1.3 Funding

Implementation of this INRMP is subject to the availability of annual funding. Funding sources for specific projects can be grouped into 3 main categories by source: federal ANG NGB funds, other federal funds, and non-federal funds. When projects identified in the plan are not implemented due to lack of funding, or other compelling circumstances, the installation will review the goals and objectives of this INRMP to determine whether adjustments are necessary. Funding options include:

- There are grant and assistance programs administered by other federal agencies that could be accessed for natural resources management at Alpena CRTC. Examples include funds associated with the CWA and endangered species.
- Other non-federal funding sources that could be considered include The Public Lands Day Program, which coordinates volunteers to improve the public lands they use for recreation, education, and enjoyment, and the National Environmental Education and Training Foundation, which manages, coordinates, and generates financial support for the program (https://www.neefusa.org/npld).
- Alpena CRTC may also consider entering into cooperative or mutual aid agreements with states, local governments, non-governmental organizations, and other individuals.

10.1.4 Cooperative Agreements

The DoD and subcommand entities have MOU, MOA, and other cooperative agreements with other federal agencies, conservation and special interest groups, and various state agencies in order to provide assistance with natural resources management at installations across the US Generally, these agreements allow installations and agencies or conservation and special interest groups to obtain mutual conservation objectives. The DoD agreements applicable to Alpena CRTC include:

- MOU between DoD and USFWS/IFWA for a Cooperative Integrated Natural Resource Program associated with the ecosystem-based management of fish, wildlife, and plant resources on military lands (2006).
- MOU between DoD and USFWS/International Fund for Animal Welfare (IFAW) to promote the conservation of migratory birds (2011).
- MOU between the DoD and USEPA to form a working partnership to promote environmental stewardship by adopting integrated pest management strategies to reduce the potential risks to human health and the environment associated with pesticides (2012).
- MOA for federal Neotropical Migratory Bird Conservation Program and addendum (Partners in Flight-Aves De Las Americas) among DoD, through each of the Military Services, and over 110 other federal and state agencies and non-governmental organizations (1991).
- MOU between the DoD and Ducks Unlimited, Inc. to provide a foundation for cooperative development of selected wetlands and associated uplands in order to maintain and increase waterfowl populations and to fulfill the objectives of the North American Waterfowl Management Plan, within the context of DoD's environmental security and military missions (2006).
- MOU between DoD and NRCS to promote cooperative conservation where appropriate (2006).
- MOU with Watchable Wildlife Incorporated (2002).
- MOU between the DoD and BCI to identify, document and maintain bat populations and habitats on DoD installations (2011).
- Cooperative Agreement between DoD and The Nature Conservancy to work cooperatively in areas of mutual interest (2010).
- Interagency Agreement (2010) and MOU (2009) between USAF and US Forest Service (USFS) to enhance cooperation and improve public service, and management of natural and cultural resources on lands managed by the USAF and the USFS.
- MOA (2003) between FAA, USAF, US Army, US EPA, USFWS, and USDA to address aircraft-wildlife strikes, available at https://www.faa.gov/airports/environmental/media/wildlife-hazard-mou-2003.pdf.

For a further list of cooperative agreements and MOUs please visit
http://www.denix.osd.mil/nr/legislationandpolicy/mousandmoas/
https://www.denix.osd.mil/announcements/unassigned/sikes-tripartite-mou/
https://www.denix.osd.mil/arc/derpfy2002/unassigned/appendix-d-interagency-agreements-dsmoas-atsdr-and-cooperative-agreements-derp-fy02/

10.1.5 Consultations Requirements

Alpena CRTC has multiple natural resources consultation requirements in addition to the INRMP development and review requirements as identified in the Sikes Act. Federally listed species management requires ESA Section 7 consultation with the USFWS. State-listed species management, as well as game species management, requires consultation with MDNR. Actions that fall under the jurisdiction of Section 404 or 401 of the CWA necessitate permitting from MDEQ. Additional information concerning the implementation of the ESA can be found in **Section 2.3.1**.

10.2 Annual INRMP Review and Coordination Requirements

Per DoD policy, Alpena CRTC will review the INRMP annually in cooperation with the USFWS and MDNR. On an annual basis, the EM will invite the USFWS Regional Office, the USFWS local field office, the MDNR, and ANG NGB/A4AM to attend a meeting or participate in a conference call to review previous year INRMP implementation and discuss implementation of upcoming programs and projects. Invitations will be either by letter or email. Attendance is at the option of those invited, but at minimum the USFWS local field office and 1 representative of MDNR are expected to attend. The meeting will be documented with an agenda, meeting minutes and sign-in roster of attendees.

At this annual meeting the need for updates or revisions will be discussed. If updates are needed, Alpena CRTC will initiate the updates and after agreement of all 3 parties they will be added to the INRMP. If it is determined that major changes are needed, all 3 parties will provide input and an INRMP revision will be initiated with Alpena CRTC acting as the lead coordinating agency. The annual meeting will be used to expedite the more formal review for operation and effect and if all parties agree and document their mutual agreement, it can fulfill the requirement to review the INRMP for operation and effect.

If not already determined in previous annual meetings, by the fourth year annual review a determination will be made jointly to continue implementation of the existing INRMP with updates or to proceed with a revision. If the parties feel that the annual reviews have not been sufficient to evaluate operation and effect and they cannot determine if the INRMP implementation should continue or be revised, a formal review for operation and effect will be initiated. The determination on how to proceed with INRMP implementation or revision will be made after the parties have had time to complete this review.

As part of the annual review, Alpena CRTC will specifically:

- Invite feedback from USFWS and MDNR on the effectiveness of the INRMP.
- Inform USFWS and MDNR which INRMP projects and activities are required to meet current natural resources compliance needs.
- Document specific INRMP action accomplishments from the previous year.

10.3 INRMP Update, and Revision Process

10.3.1 Review for Operation and Effect

Not less than every 5 years, the INRMP will be reviewed for operation and effect to determine if the INRMP is being implemented as required by the Sikes Act and contributing to the management of natural resources at Alpena CRTC. The review will be conducted by the three cooperating parties to include the Commander responsible for the INRMP, the Supervisor of the USFWS Michigan Field Office, and Secretary of the MDNR. While these are the responsible parties, technical representatives generally are the personnel who actually conduct the review.

The review for operation and effect will either conclude that the INRMP is meeting the intent of the Sikes Act and only needs an update and implementation can continue; or that it is not effective in meeting the intent of the Sikes Act and it must be revised. The conclusion of the review will be documented in a jointly executed memorandum, meeting minutes, or in some way that reflects mutual agreement.

If only updates are needed, they will be completed in a manner agreed to by all parties. The updated INRMP will be reviewed by the local USFWS field office in Michigan and MDNR Secretary. Once concurrence letters or signatures are received from the Supervisor of the USFWS Michigan Field Office and the MDNR Commissioner, the update of the INRMP will be complete and implementation will continue. Generally, the environmental impact analysis will continue to be applicable to updated INRMPs, and a new analysis will not be required.

If a review of operation and effect concludes that an INRMP must be revised, there is no set time to complete the revision. The existing INRMP remains in effect until the revision is complete and USFWS and MDNR concurrence on the revised INRMP is received. Alpena CRTC will endeavor to complete such revisions within 18 months depending upon funding availability. Revisions to the INRMP will go through a detailed review process similar to development of the initial INRMP to ensure Alpena CRTC’s military mission, USFWS, and MDNR concerns are adequately addressed, and the INRMP meets the intent of the Sikes Act.

11.0 APPENDICES

APPENDIX A. REFERENCES

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APPENDIX B. LAW, REGULATIONS, POLICIES, AND EXECUTIVE ORDERS

Federal Laws

American Indian Religious Freedom Act of 1978 (Public Law 95-341; 42 USC §1196) – requires the US, where appropriate, to protect and preserve religious rights of the American Indian, Eskimo, Aleut, and Native Hawaiians, including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.

Animal Damage Control Act of 1931 (7 USC §426 *et seq*.) – provides broad authority for investigation, demonstrations and control of mammalian predators, rodents and birds.

Anti-Deficiency Act of 1982 (31 USC §1341 *et seq.*) - provides that no federal official or employee may obligate the government for the expenditure of funds before funds have been authorized and appropriated by Congress for that purpose.

American Antiquities Act of 1906 (Public Law 59-209; 16 USC §431-433) – authorizes the President to designate historic and natural resources of national significance, located on federal lands, as National Monuments for the purpose of protecting items of archeological significance.

Archeological and Historical Preservation Act of 1974 (Public Law 95-96; 16 USC §469 *et seq*.) – provides for the preservation of historical and archeological data, including relics and specimens, threatened by federally funded or assisted construction projects.

Archeological Resources Protection Act of 1979 (16 USC §470 *et seq*.) – prohibits the excavation or removal from federal or Indian lands any archeological resources without a permit.

Bald Eagle Protection Act of 1940 (Public Law 87-884; 16 USC §668a-d) – prohibits the taking or harming (i.e. harassment, sale, or transportation) of bald eagles or golden eagles, including their eggs, nests, or young, without appropriate permit.

Clean Air Act of 1970 (42 USC §7401 *et seq*.) – regulates air emissions from stationary, area, and mobile sources. This law authorizes the USEPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment.

Clean Water Act of 1972 (Public Law 92-500; 33 USC §1251 *et seq*.) – aims to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Under Section 401, states have authority to review federal permits that may result in a discharge to wetlands or water bodies under state jurisdiction. Under section 404, a program is established to regulate the discharge of dredged or fill material into the Nation's waters, including wetlands.

Coastal Zone Management Act of 1972 (Public Law 92-583; 16 USC §1451 *et seq.*) – provides incentives for coastal states to develop coastal zone management programs. Federal actions that impact the coastal zone must be consistent to the maximum extent practicable with the state program.

Conservation and Rehabilitation Program on Military and Public Lands (Public Law 93-452; 16 USC §670 *et seq*.) – provides for fish and wildlife habitat improvements, range rehabilitation, and control of off-road vehicles on federal lands.

Conservation Programs on Military Reservations (Public Law 90-465; 16 USC §670 *et seq.*) – Requires each military department to manage natural resources and to ensure that services are provided which are necessary for management of fish and wildlife resources on each installation; to provide their personnel with professional training in fish and wildlife

management; and to give priority to contracting work with federal and state agencies that have responsibility for conservation or management of fish and wildlife. In addition it authorizes cooperative agreements (with states, local governments, non- governmental organizations, and individuals) which call for each party to provide matching funds or services to carry out natural resources projects or initiatives.

Endangered Species Act of 1973, as amended (16 USC §1531 *et seq.*) – provides for the identification and protection of threatened and endangered plants and animals, including their critical habitats. Requires federal agencies to conserve threatened and endangered species and cooperate with state and local authorities to resolve water resources issues in concert with the conservation of threatened and endangered species. This law establishes a consultation process involving federal agencies to facilitate avoidance of agency action that would adversely affect species or habitat. Further, it prohibits all persons subject to US jurisdiction from taking, including any harm or harassment, endangered species.

Federal Insecticide, Fungicide, and Rodenticide Act of 1947 (Public Law 92-516; 7 USC §136 *et seq.*) – governs the use and application of pesticides in natural resource management programs. This law provides the principal means for preventing environmental pollution from pesticides through product registration and applicator certification.

Federal Land Policy and Management Act of 1976 (43 USC §1701) – establishes public land policy and guidelines for its administration and provides for the management, protection, development, and enhancement of the public lands.

Federal Noxious Weed Act of 1974 (Public Law 93-629; 7 USC §2801) – provides for the control and eradication of noxious weeds and their regulation in interstate and foreign commerce.

Fish and Wildlife Conservation Act of 1980 (Public Law 96-366; 16 USC §2901 *et seq.*) – encourages management of non-game species and provides for conservation, protection, restoration, and propagation of certain species, including migratory birds threatened with extinction.

Fish and Wildlife Coordination Act of 1934 (16 USC §661 *et seq.*) – provides a mechanism for wildlife conservation to receive equal consideration and coordinate with water-resource development programs.

Land and Water Conservation Act of 1965 (16 USC §4601 *et seq.*) – assists in preserving, developing, and assuring accessibility to outdoor recreation resources.

Migratory Bird Conservation Act of 1929 (16 USC §715 *et seq.*) – establishes a Migratory Bird Conservation Commission to approve areas recommended by the Secretary of the Interior for acquisition with Migratory Bird Conservation Funds.

Migratory Bird Treaty Act of 1918 (Public Law 65-186; 16 USC §703 *et seq.*) – provides for regulations to control taking of migratory birds, their nests, eggs, parts, or products without the appropriate permit and provides enforcement authority and penalties for violations.

National Environmental Policy Act of 1969 (Public Law 91-190; 42 USC §4321 *et seq.*) – mandates federal agencies to consider and document environmental impacts of proposed actions and legislation. In addition, it mandates preparation of comprehensive environmental impact statements where proposed action is “major” and significantly affects the quality of the human environment.

Native American Graves Protection and Repatriation Act of 1990 (Public Law 101-601; 25 USC §§3001-3013) – addresses the recovery, treatment, and repatriation of Native American and Native Hawaiian cultural items by federal agencies and museums. It includes provisions for data gathering, reporting, consultation, and issuance of permits.

Resource Conservation and Recovery Act of 1976 (42 USC §6901 *et seq.*) – establishes a comprehensive program which manages solid and hazardous waste. Subtitle C, Hazardous Waste Management, sets up a framework for managing hazardous waste from its initial generation to its final disposal. Waste pesticides and equipment/containers contaminated by pesticides are included under hazardous waste management requirements.

Sikes Act Improvement Act of 1997 (Public Law 105-85; 16 USC §670a *et seq.*) – amends the Sikes Act of 1960 to mandate the development of an integrated natural resources management plan through cooperation with the Department of the Interior (through the USFWS), DoD, and each state fish and wildlife agency for each military installation supporting natural resources.

Soil Conservation Act of 1935 (16 USC §590a *et seq.*) – provides for soil conservation practices on federal lands.

Federal Regulations

40 CFR 1500-1508 – Council on Environmental Quality (CEQ) Regulations on Implementing National Environmental Policy Act (NEPA) Procedures

40 CFR 6 – USEPA Regulations on Implementation of NEPA Procedures

40 CFR 162 – USEPA Regulations on Insecticide, Fungicide, and Rodenticide Use

15 CFR 930 – Federal Consistency with Approved Coastal Management Programs

50 CFR 17 – USFWS list of Endangered and Threatened Wildlife

50 CFR 10.13 – List of Migratory Birds

32 CFR 190 – Natural Resources Management Program

Federal Executive Orders (EOs)

Environmental Safeguard for Activities for Animal Damage Control on Federal Lands (EO 11870) - restricts the use of chemical toxicants for mammal and bird control.

Exotic Organisms (EO 11987) – restricts federal agencies in the use of exotic plant species in any landscape and erosion control measures.

Energy Efficiencies and Water Conservation at Federal Facilities (EO 12902) – federal agency use of energy and water resources is directed towards the goals of increased conservation and efficiency.

Floodplain Management (EO 11988) – specifies that agencies shall encourage and provide appropriate guidance to applicant to evaluate the effects of their proposals in floodplains prior to submitting applications. This includes wetlands that are within the 100-year floodplain and especially discourages filling.

Off-Road Vehicles on Public Lands (EO 11989) – The respective agency shall determine if the use of off-road vehicles will cause or is causing considerable adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources of particular areas or trails of the public lands, immediately close such areas or trails to the type of off-road vehicle causing such effects, until such time as he determines that such adverse effects have been eliminated and that measures have been implemented to prevent future recurrence.

Greening the Government through Leadership in Environmental Management (EO 13148) – requires the head of each federal agency to be responsible for ensuring that all necessary actions are taken to integrate environmental accountability into agency day-to-day decision making and long-term planning processes across all agency missions, activities, and functions.

Indian Sacred Sites (EO 13007) – provides for the protection of and access to Indian sacred sites.
Invasive Species (EO 13112) – directs federal agencies to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.
Protection and Enhancement of Environmental Quality (EO 11514) – provides for environmental protection of federal lands and enforces requirements of NEPA.
Protection of Wetlands (EO 11990) – directs all federal agencies to take action to minimize the destruction loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. This applies to the acquisition, management, and disposal of federal lands and facilities; to construction or improvements undertaken, financed, or assisted by the federal government; and to the conduct of federal activities and programs which affect land use.
Responsibilities of Federal Entities to Protect Migratory Birds (EO 13186) – directs all federal agencies taking actions that have a potential to negatively affect migratory bird populations to develop and implement a Memorandum of Understanding with the USFWS by January 2003 that shall promote the conservation of migratory bird populations.

Department of Defense Instructions (DoDI), Air Force Instructions (AFI), & Air Force Pamphlets (PAM)

DoDI 4715.03 – Natural Resources Conservation Program
DoDI 4165.57 – Air Installations Compatible Use Zones
DoDI 4150.07 – Pest Management Program
DoDI 6055.06 – Fire and Emergency Services Program
AFI 32-7064 – Integrated Natural Resources Management
AFI 32-1053 – Integrated Pest Management Program
AFI 32-7062 – Air Force Comprehensive Planning
AFI 32-7065 – Cultural Resources Management
AFPAM 91-212 – BASH Techniques

Department of Defense Memoranda

Memorandum, Assistant Deputy Under Secretary of Defense (Environment, Safety and Occupational Health), 20 Sept 11, Subject: *Interim Policy on Management of White Nose Syndrome in Bats*.
Memorandum, Assistant Deputy Under Secretary of Defense (Environment, Safety and Occupational Health), 3 Apr 07, Subject: *Guidance to Implement the Memorandum of Understanding to Promote the Conservation of Migratory Birds*.
Memorandum, Assistant Deputy Under Secretary of Defense (Environment, Safety and Occupational Health), 14 Aug 06, Subject: *Integrated Natural Resource Management Plan (INRMP) Template*
Memorandum, Assistant Deputy Under Secretary of Defense (Environment, Safety and Occupational Health), 17 May 05, Subject: *Implementation of Sikes Act Improvement Amendments: Supplemental Guidance concerning Leased Lands*
Memorandum, Assistant Deputy Under Secretary of Defense (Environment, Safety and Occupational Health), 1 Nov 04, Subject: *Implementation of Sikes Act Improvement Amendments: Supplemental Guidance concerning INRMP Reviews*
Memorandum, Deputy Under Secretary of Defense (Installations and Environment), 10 Oct 02, Subject: *Implementation of Sikes Act Improvement Act: Updated Guidance*

Memorandum, Assistant Deputy Under Secretary of Defense (Environment), 5 Aug 02, Subject: *Access to Outdoor Recreation Programs on Military Installations for Persons with Disabilities*.

Memorandum, Assistant Secretary of Army (Environment, Safety and Occupational Health), Deputy Assistant Secretary of the Navy (Environment), Deputy Assistant Secretary of the Air Force (Environment, Safety and Occupational Health), 20 Sep 11, *Subject: Interim Policy on Management of White Nose Syndrome in Bats*.

Michigan

Natural Resources and Environmental Protection Act (NREPA): Michigan's environmental acts have been consolidated into the NREPA of 1994 (as amended Act 451).

The NREPA serves to protect the environment and natural resources of the state; to codify, revise, consolidate, and classify laws relating to the environment and natural resources of the state; to regulate the discharge of certain substances into the environment; to regulate the use of certain lands, waters, and other natural resources of the state; to prescribe the powers and duties of certain state and local agencies and officials; to provide for certain charges, fees, assessments, and donations; to provide certain appropriations; to prescribe penalties and provide remedies; and to repeal acts and parts of acts.

The NREPA is organized into Chapters, which include Habitat Protection, Management of Renewable Resources, Management of Nonrenewable Resources, and Recreation. The relevant Parts within these Chapters are listed below. Details regarding the provisions within each Part can be found at: http://www.legislature.mi.gov/documents/mcl/pdf/mcl-451-1994-ii-3-155.pdf.

Article III Chapter 1 - Habitat Protection
Part 301 - Inland Lakes and Stream (Section 324.30101-324.30113)
Part 303 - Wetlands Protection (Section 324.30301-324.30329)
Part 305 - Natural Rivers (Section 324.30501-324.30515)
Part 309 - Inland Lake Improvements (Section 324.30901-324.30929)
Part 311 - Local River Management (Section 324.31101-32.31119)
Part 317 - Aquifer Protection and Dispute Resolution (Section 324.31701-324.31713)
Part 351 - Wilderness and Natural Areas (Section 325.35101-324.35111)
Part 355 - Biological Diversity Conservation (Section 324.35501-324.35506)
Part 365 - Endangered Species (Section 324.36501-324.36507)

Article III Chapter 2 - Management of Renewable Resources
Part 401 - Wildlife Conservation (Section 324.40101-324.40120)
Part 403 - Wildlife Preservation (Section 324.40301-324.40303)
Part 405 - Wildlife Restoration, Management and Research (Section 324.40501-324.40501)
Part 411 - Protection and Preservation of Fish, Game, and Birds (Section 324.41101-324.41105)
Part 413 - Transgenic and Nonnative Organisms (Section 324.41301-324.41325)