Integrated Natural Resources Management Plan (INRMP) Pease Air National Guard Base

2019

Prepared for:

Air National Guard
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Under Cooperative Agreement With:
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Cooperative Agreement:
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SIGNATURE PAGE

The Pease Air National Guard Base (ANGB), New Hampshire Air National Guard (NHANG) facility, Integrated Natural Resources Management Plan (INRMP) has been prepared for the 157 Air Refueling Wing (157 ARW) to manage significant natural resources in support of the military mission. Significant natural resources include the presence of state-listed species and Waters of the United States (WOUS) including wetlands. The Pease ANGB INRMP meets the intent of the Sikes Act (16 US Code [USC] § 670a–670l, 74 Stat. 1052).

To the extent that resources permit, the United States (US) Fish and Wildlife Service (USFWS), New Hampshire Fish and Game Department (NHFGD), and the NHANG by signature of their agency representative, do hereby enter into a cooperative agreement for the conservation, protection, and management of natural resources present on Pease ANGB. The agreement may be modified and amended by mutual agreement of the authorized representatives of the 3 agencies. This 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 the 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:

POGOREK.JOHN.W.1007970168 Digitally signed by POGOREK.JOHN.W.1007970168 Date: 2019.10.25 13:57:53 -04'00'

John W. Pogorek, Col Date
New Hampshire Air National Guard
Pease ANGB Commander

Thomas R. Chapman 9 Oct 2019 Date
US Fish and Wildlife Service
Field Office Supervisor

Glenn Normandeau 11/1/2019 Date
New Hampshire Fish and Game Department
Executive Director

ANNUAL REVIEW DOCUMENTS

This page is used to certify the annual review and coordination of the Pease ANGB INRMP.

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

Year: 2020

CASEY.MATTHEW.CAMPBELL.1391725710 Digitally signed by CASEY.MATTHEW.CAMPBELL.1391725710 Date: 2020.09.08 14:22:15 -04'00'

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New Hampshire Air National Guard

THOMAS CHAPMAN Digitally signed by THOMAS CHAPMAN Date: 2020.12.04 14:40:51 -05'00'

[Thomas R. Chapman, Supervisor, New England Field Office] Date

US Fish and Wildlife Service

Scott R Mason 9-14-20

[ ] Date

New Hampshire Fish and Game Department

SUMMARY OF CHANGES

- **P.43 and Table 4:** Bald eagles State status has changed to Species of Special Concern (SC)
- **P.40:** Streamlined Section 7 consultations for the Northern Long Eared Bat can now be completed on the IPaC website (https://www.fws.gov/midwest/endangered/mammals/nleb/determination_key_instructions_nleb.html).

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Year: 2021

[ ]	Date
New Hampshire Air National Guard	
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US Fish and Wildlife Service	
[ ]	Date
New Hampshire Fish and Game Department	

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Year: 2022

[ ]	Date
New Hampshire Air National Guard	
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New Hampshire Fish and Game Department	

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Year: 2024

[ ]	Date
New Hampshire Air National Guard	
[ ]	Date
US Fish and Wildlife Service	
[ ]	Date
New Hampshire Fish and Game Department	

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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 NHFGD, and, if required, the National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS). During the annual meetings, 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 NHFGD. 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
AF	Air Force
AFB	Air Force Base
AFI	Air Force Instruction
ANG	Air National Guard
ANGB	Air National Guard Base
ANGRC	Air National Guard Readiness Center
AOA	Airport Operations Area
ARW	Air Refueling Wing
BA	Biological Assessment
BASH	Bird/Wildlife Aircraft Strike Hazard
BCC	Birds of Conservation Concern
BCI	Bat Conservation International
BGEPA	Bald and Golden Eagle Protection Act
BHWG	Bird Hazard Working Group
BMP	Best Management Practice
CAA	Clean Air Act
CATEX	Categorical Exclusion
CE	Civil Engineering
CECOS	Civil Engineer Corps Officers School
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
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
DUSD	Deputy Under Secretary of Defense
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EM	Environmental Manager
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FY	Fiscal Year
GIS	Geographic Information Systems
GMZ	Groundwater Management Zones
HAZMART	Hazardous Materials Pharmacy
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
INRMP	Integrated Natural Resources Management Plan

IPM	Integrated Pest Management
IPMC	Integrated Pest Management Coordinator
JD	Jurisdictional Determination
MBTA	Migratory Bird Treaty Act
MOA	Memorandums of Agreement
MOU	Memorandums of Understanding
MSGP	Multi-Sector General Permit
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NGB	National Guard Bureau
NHANG	New Hampshire Air National Guard
NHCP	New Hampshire Coastal Program
NHDA	New Hampshire Department of Agriculture
NHDES	New Hampshire Department of Environmental Services
NHFGD	New Hampshire Fish and Game Department
NHWAP	New Hampshire Wildlife Action Plan
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRDC	Natural Resources Defense Council
OPR	Office of Primary Responsibility
P2	Pollinator partnership
PARC	Partners in Amphibian and Reptile Conservation
PCDA	Paint Can Disposal Area
PDA	Pease Development Authority
Pease ITP	Pease International Tradeport
PEM	Palustrine Emergent
PFO	Palustrine Forested
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonate
PIF	Partners in Flight
POL	Petroleum, Oil, and Lubricants
PSM	Portsmouth International Airport at Pease
RCRA	Resource Conservation and Recovery Act
SPRP	Oil and Hazardous Substances Spill Prevention and Response Plan
SWPPP	Stormwater Pollution Prevention Plan
TCE	Trichloroethylene
TSCA	Toxic Substances Control Act
US	United States
USACE	US Army Corps of Engineers
USAF	US Air Force
USC	US Code
USCB	US Census Bureau
USDA	US Department of Agriculture
USDA-WS	US Department of Agriculture – Wildlife Services
US EPA	US Environmental Protection Agency
USFS	US Department of Agriculture Forest Service

USFWS	US Fish and Wildlife Service
UST	Underground Storage Tank
WAP	Wildlife Action Plan
WHMP	Wildlife Hazard Management Plan
WOUS	Waters of the United States

1.0 EXECUTIVE SUMMARY

The Sikes Act Improvement Act of 1997, 16 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 this INRMP help manage water resources, support bird/wildlife aircraft strike hazard (BASH) reduction, and sustain natural resources. The Pease ANGB INRMP is intended to be in support of and consistent with the intent of the Sikes Act.

The Pease ANGB INRMP is the primary guidance document and tool for managing natural resources on the installation. Pease ANGB is composed of 216 acres of USAF property surrounded on all sides by the Pease International Tradeport (Pease ITP) which was formerly Pease Air Force Base (AFB) property. The Pease ITP includes the Portsmouth International Airport (PSM) and is managed by the Pease Development Authority (PDA). The primary mission of the 157 ARW at Pease ANGB is to provide worldwide support with the KC-46 aerial refueling tanker aircraft as well as to staff, equip, and train combat flying and combat support units to augment the USAF. Natural resources management on Pease ANGB must be 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 Pease ANGB lands remain available to support the NHANG military mission into the future.

Specific goals in the Pease ANGB 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 project annual work plans are summarized in **Section 9**. The Pease ANGB 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 operations. The implementation of the Pease ANGB 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.

2.0 GENERAL INFORMATION

2.1 Purpose and Scope

This INRMP is the primary guidance document and tool for natural resource management at Pease ANGB 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. 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 Pease ANGB INRMP is consistent with the Sikes Act as required by the DoD, USAF, and the National Guard Bureau (NGB). It was developed as a result of the presence of state-listed species and WOUS including wetlands. 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 Pease ANGB 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 Pease ANGB incorporates these elements as 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 Pease ANGB INRMP have been developed to enhance and maintain biological diversity within the installation's 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 Endangered Species Act (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

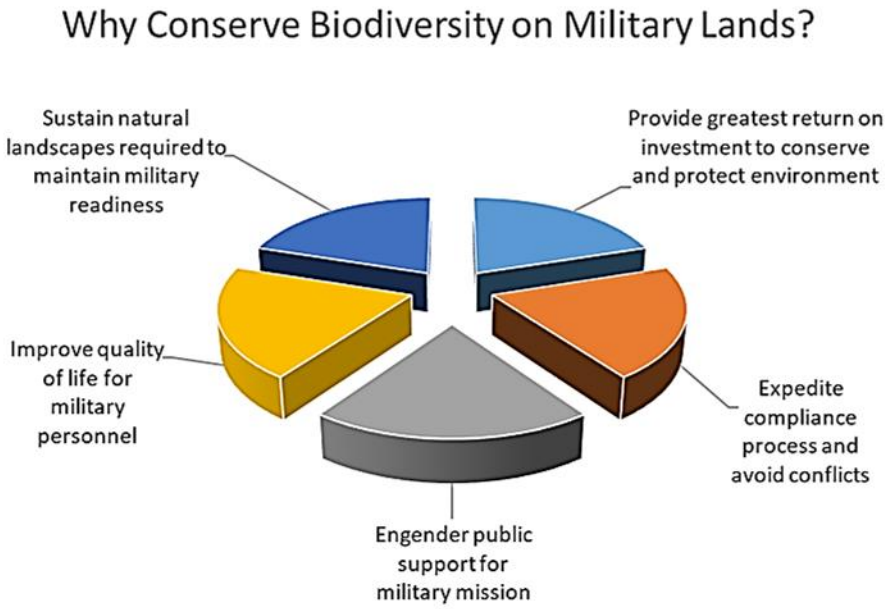

Figure 1. Why conserve biodiversity on Military Lands
**Adapted from Keystone Center, 1996.*

2.3 Authority

2.3.1 Natural Resources Law, Regulations & Policy

The ANG, USFWS, and NHFGD determined an INRMP was required for Pease ANGB due to the presence of significant natural resources including wetlands and the potential for state and federally listed species to occur 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 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. 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, Pease ANGB 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 Pease ANGB's first INRMP (NHANG 2014) 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 Part 989. The EIAP and decision-making process for the Proposed Action (implementation of the 2014 Pease ANGB INRMP) involved an examination of all environmental issues pertinent to the action proposed. Impact evaluations of the 2014 Pease ANGB INRMP determined that no significant environmental impacts would result from implementation of the Proposed Action or any identified alternative. This determination was based on thorough review and analysis of existing resource information, and coordination with knowledgeable, responsible personnel from the Pease ANGB and other relevant local, state, and federal agencies. The EIAP for the implementation of the 2014 Pease ANGB 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, federal agencies facilitate compliance with environmental regulations through the EIAP process. ANG installations initiate EIAP by completing Air Force (AF) Form 813 "*Request for Environmental Impact Analysis,*" through ANG Readiness Center's (ANGRC's) online NEPA Tool. The ANGRC reviews the Form 813 and associated information to determine if the proposed action requires a categorical exclusion (CATEX), EA, or environmental impact statement (EIS).

2.3.3 Responsibilities

The updated Pease ANGB INRMP has been organized to ensure the implementation of year-round, cost-effective management projects that meet the requirements of the installation. The INRMP Working Group will be responsible for the overall implementation of the INRMP. It will be made up of the key installation personnel from Pease ANGB and will assume an oversight role to ensure the effective implementation of this Plan. The Pease ANGB EM shall chair this organization for Pease ANGB and shall establish subcommittees to focus on high-priority natural resources management issues. Top- and mid-level management representation and representation from several individuals with day-to-day on-installation field experience will provide the INRMP Working Group with the leadership and structure necessary for the successful implementation of this INRMP (see **Section 10.1**). Various personnel and organizations within the ANG that are responsible for the implementation of this INRMP are described in the following subsections.

2.3.3.1 Installation Commander

The Pease ANGB Commander serves as the Chairman of the Risk Management Council and oversees the installation. In both these capacities the Commander 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 Pease ANGB Commander is the official signatory for the Pease ANGB INRMP.

2.3.3.2 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 funding is available and these projects are complementary to the installation's comprehensive planning processes.

2.3.3.3 ANG NGB/A4AM Natural Resources Program Manager

The ANG NGB/A4AM 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 Pease ANGB INRMP. The development of projects included in the 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.

2.3.3.4 Environmental Manager

The 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. Projects proposed in the Pease ANGB INRMP are reviewed by the EM and the ANG NR Program Manager. The EM should independently review deviation from the projects proposed in this INRMP.

The EM, in conjunction with the Public Affairs Office, is responsible for establishing and implementing a conservation education program to instruct installation personnel on the protection and enhancement of biological diversity on Pease ANGB. The EM directs the ongoing natural resources management activities presented in this plan. However, several management activities (e.g., BASH) fall under the responsibilities listed for other organizations. The EM will act as a technical point-of-contact for those natural resources-related activities for which the EM is not directly responsible. The EM should be aware of any new statutes or regulations that may affect natural resources management on the installation. 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).

2.3.3.5 Pest Management Coordinator

The Installation Pest Management Coordinator (IPMC) 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. The IPMC keep the INRMP Working Group appraised of proposed modifications or changes to permits as they occur or are proposed.

2.3.3.6 Flight Safety Office

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

2.3.3.7 Airfield Management

Airfield Management, the Flight Safety Office, and the PDA are responsible for implementing all activities presented in this Plan that pertain to the BASH Reduction Program. The Airfield Manager is also responsible for approving any installation improvement or construction projects.

2.3.3.8 US Department of Agriculture – Wildlife Services

US Department of Agriculture – Wildlife Services (USDA-WS) personnel are responsible for monitoring hazardous 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, as well as dispersal/harassment, capture and translocation, trapping and removal, surveillance and monitoring, and depredation permit acquisition.

2.3.3.9 Operations and Maintenance

Operations and Maintenance personnel are responsible for all grounds maintenance activities on the installation. Additionally, this office will coordinate with the EM to ensure successful implementation of habitat management protocols established in this INRMP taking into account mission requirements, natural resource management goals, and regulatory compliance requirements. Facility management personnel will also periodically review grounds maintenance equipment to determine if new or additional equipment is needed for the proper maintenance of the installation's landscapes.

2.3.3.10 Legal Office

The Legal Office is responsible for ensuring the implementation of the management objectives contained within the Pease ANGB 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 the 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.

2.3.3.11 Public Affairs Office

The Public Affairs Office is responsible for the coordination of public access for events at Pease ANGB. The Public Affairs Office serves as the point of contact to interface between the

Installation Commander and civilian groups interested in the installations for environmental, educational, or other purposes.

2.3.3.12 US Fish and Wildlife Service

The USFWS is a signatory of the INRMP and provides input regarding natural resource projects and operational component plans. The EM and/or the ANG NR Program Manager can request updates of new species added to the federal threatened and endangered species lists which have the potential for inhabiting Pease ANGB from USFWS. In addition, the USFWS, when feasible, will support wildlife and vegetation surveys conducted at the Pease ANGB.

2.3.3.13 New Hampshire Fish and Game Department

The NHFGD is a signatory of the INRMP and provides input regarding natural resource projects and operational component plans. The EM and/or the ANG NR Program Manager can request updates of new species added to the federal threatened and endangered species lists which have the potential for inhabiting Pease ANGB from NHFGD. In addition, the NHFGD, when feasible, will support wildlife and vegetation surveys conducted at the Pease ANGB.

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. The plans associated with or supportive of the Pease ANGB INRMP include the following:

- BASH Plan – provides a summary of the BASH program on Pease ANGB, including techniques, processes, responsibilities, and management recommendations (NHANG 2018). BASH management on Pease ANGB is discussed further in **Section 7.8.3**.
- Integrated Pest Management Plan (IPM Plan) - plan for the management of pest species, including nuisance wildlife and invasive species in order to minimize impacts to the military mission, natural resources, and the environment (NHANG 2019b).
- Installation Development Plan Update - plan that updates the Installation Development Plan's latest revision dated May 2011. It incorporates the most recent changes involving existing facilities, outlines current planning goals and objectives, and influences future decision-making (NHANG 2011).
- Hazardous Waste Management Plan - identifies hazardous waste streams, generation points, accumulation points, waste sampling and analysis procedures, safety procedures, management procedures, best practices, and 157 ARW responsibilities on Pease ANGB (NHANG 2016). The Hazardous Waste Management Plan mitigates risk by ensuring proper tracking, characterization, and storage of hazardous waste, as well as creating emergency containment and response procedures in the event of spills or accidental releases (NHANG 2016).
- Oil and Hazardous Substances Spill Prevention and Response Plan (SPRP) - establishes policies, procedures, and best practices for reducing oil discharges into Waters of the US. This plan ensures rapid response and minimization of the damages caused by discharges of oil and hazardous substances while providing resources and other assistance necessary to support federal pollution response operations in accordance with all applicable policy and guidelines (NHANG 2017b).

- Cultural Resources Survey - A cultural resources survey was completed in April 2009 for Pease ANGB. No structures appeared to meet the criteria for listing in the National Register of Historic Places, however two Native American artifacts were encountered as a result of the archaeological survey. The site is in a disturbed context, does not have integrity, and is not eligible for inclusion in the National Register of Historic Places. No other sites were found in any of the other survey areas (NHANG 2009). Pease ANGB was issued an ICRMP Waiver from the NGB on 1 March 2018 in accordance with AFI 32-7065, Section 3.4.8.6. The waiver is valid for a period of 5 years. Local Native American groups were consulted during the development of the original 2014 Pease ANGB INRMP.

In addition, this INRMP is also integrated with the following plans from other agencies and organizations.

- Stormwater Pollution Prevention Plan (SWPPP) for Pease ITP – plan for the management of stormwater and water-borne pollution at Pease ITP (Pease ITP 2011a). Pease ANGB falls under the SWPPP for the Tradeport (Pease ITP 2011a).
- Wildlife Hazard Management Plan for Pease ITP – Pease ANGB BASH and natural resources management will be conducted in conjunction and in collaboration with the PDA and co-supportive of the Pease ITP Wildlife Hazard Management Plan (WHMP; Pease ITP 2017).
- New Hampshire Wildlife Action Plan – The DoD and the ANG encourage support of state Wildlife Action Plans (WAPs) as part of a comprehensive installation natural resources program. The 2015 New Hampshire WAP identifies species of greatest conservation need and provides tools and resources for decision makers to maintain critical wildlife populations and their habitats.
- New Hampshire Climate Change Action Plan – In March 2009, New Hampshire unveiled a Climate Change Action Plan (State of New Hampshire 2009). This plan is designed to protect natural resources and to maintain the amount of carbon fixed or sequestered in New Hampshire.
- New Hampshire Coastal Program Guide to Federal Consistency – This document outlines the New Hampshire Coastal Program (NHCP) plan to accomplish its mission of balancing the preservation of coastal resources with the social and economic needs of current and succeeding/ future generations. It also describes the federal consistency review process in New Hampshire which will ensure that federal activities affecting any land or water use, or natural resources in New Hampshire's coastal zone will be conducted in a manner consistent with enforceable policies of the NHCP (New Hampshire Department of Environmental Services [NHDES] 2018a).

3.0 INSTALLATION OVERVIEW

3.1 Location and Area

The 157 ARW on Pease ANGB is 216 acres bounded on all sides by Pease ITP. The Pease ITP is a 4,255 acre property which includes four different zoning types: the airport zone, airport industrial zone, an industrial zone, and business/ commercial zone. An additional 781 acres are also set aside for natural resource protection and wetlands mitigation.

The Pease ANGB is located in Rockingham County, in the Town of Newington, New Hampshire, 55 miles north of Boston and three miles south of Kittery, Maine. Pease ANGB is situated on the northeast side of the PSM and consists of 216 acres and includes 41 facilities. The PSM and the larger Pease ITP is owned and operated by the PDA. A regional map is included in **Figure 2**. A map of Pease ANGB and its immediate vicinity is provided in **Figure 3** and an overview of the Pease ANGB boundaries and facilities is provided in **Figure 4**.

Figure 2. Pease ANGB Regional Map

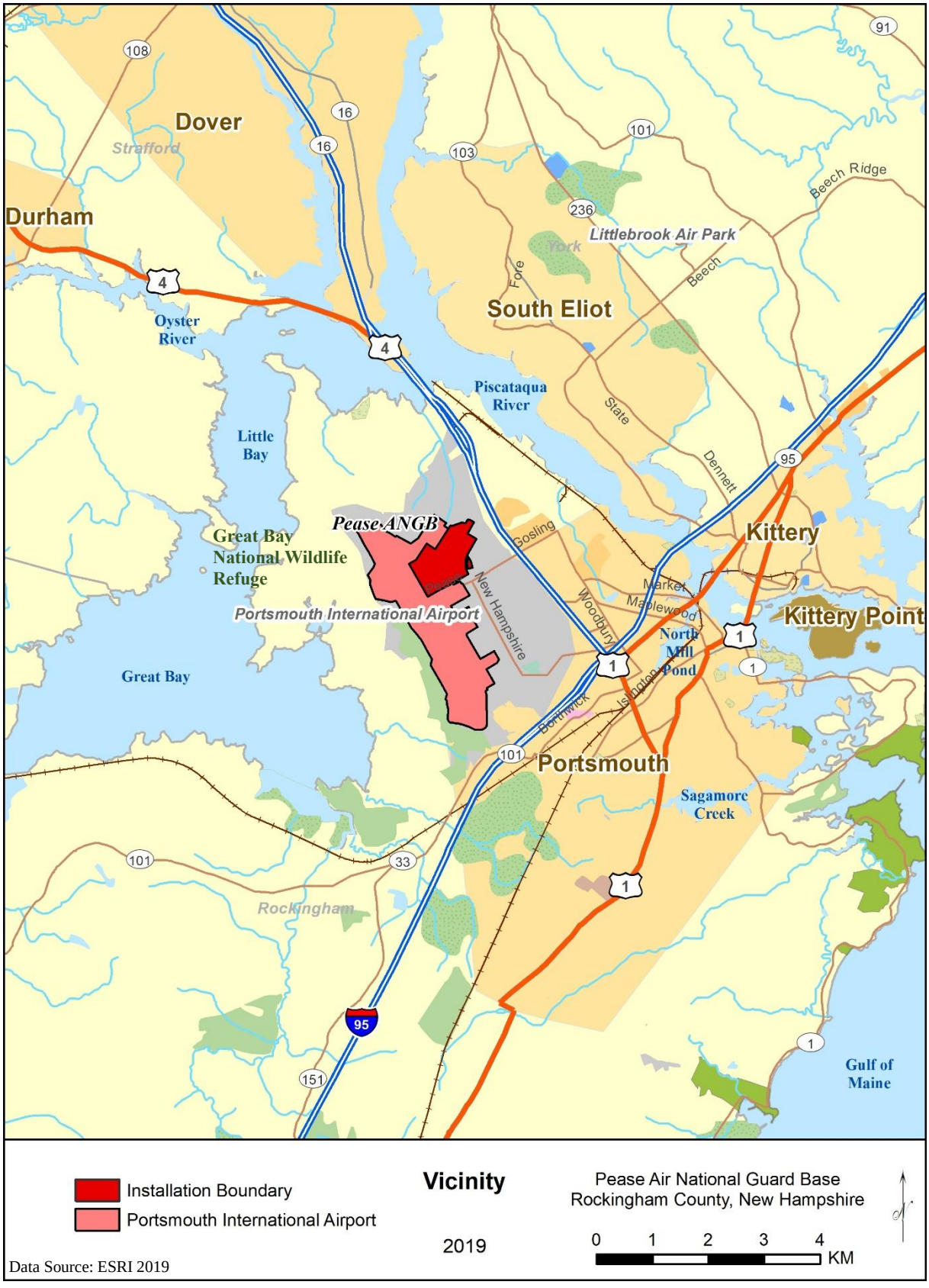

Figure 3. Pease ANGB Vicinity Map

Figure 4. Pease ANGB Facilities Map

3.2 Installation History

Pease ANGB is located on property that was formerly Pease AFB. From 1956 through 1966, Pease AFB was the home of the 100 Bombardment Wing, and the 509 Bombardment Wing from 1958 through 1988. In 1966, the NHANG relocated the 157 Military Airlift Group from Grenier Field at Manchester, NH to Pease AFB. In December 1988, Pease AFB was selected as one of 86 military installations to be closed as part of the Secretary of Defense's Commission on Base Realignment and Closure and officially closed on March 31, 1991. The majority of the 4,100 acres of Pease AFB was transferred to the PDA for civilian use and the remaining acreage under military control was transferred to the NHANG and renamed Pease Air National Guard Base (NHANG 2014).The Pease Airport, now known as Portsmouth International Airport at Pease or PSM, opened for civilian use in 1991 and became a Federal Aviation Administration (FAA)-certified airport under Federal Aviation Regulation Part 139 in October 1992 (NHANG 2014).

3.3 Military Missions

The ANG mission is two-fold with 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 the 157 ARW at Pease ANGB is to maintain and operate KC-46 aircraft, to provide worldwide support with the KC-46 aerial refueling tanker aircraft, and to staff, equip, and train combat flying and combat support units to augment the USAF. The 157 ARW provides both homeland defense and assistance with state emergencies and natural disasters to protect life and property and to preserve peace, order, and public safety. The 157 ARW currently maintains 12 KC-46 primary assigned aircraft and provides ground support to numerous transient aircraft.

3.4 Surrounding Communities

Pease ANGB is located in Rockingham County, New Hampshire within the Town of Newington, and between the cities of Portsmouth and Greenland. Portsmouth sits near the mouth of the Piscataqua River, which acts as a dividing line between New Hampshire and Maine. The population of Portsmouth is approximately 21,000 people (US Census Bureau [USCB] 2010).

The Town of Newington covers roughly 8.5 square miles, with a population of approximately 900 (Newington 2019). Newington is primarily a commercial and industrial city, and has the largest deepwater port in New Hampshire. The entire Old Town Historical District is listed on the National Register of Historic Places (Newington 2019).

Land surrounding the airport is predominantly forested and a patchwork of interspersed commercial/industrial plots. Small wetland areas lie to the northwest of the airport. Mixed parcels of residential area surrounded by forested land are located further to the northwest. Directly to the southeast are forested residential parcels with a large area of playing field/recreational use just south of the main runway (NHANG 2019).

Interstate Highway 95 traverses just beyond the southeastern boundary of the airport, with areas of wetlands and forest interspersed with smaller plots of commercial/industrial areas. To the southwest are forested areas with smaller agricultural and residential parcels. To the northeast, land use is a patchwork of commercial/industrial and residential, offset by larger forested areas (City of Portsmouth 2019).

3.5 Local and Regional Natural Areas

Approximately 1 mile to the west and north of the airport boundary, lies the Great Bay National Wildlife Refuge, a tidal estuary which outlets into the Piscataqua River. The Great Bay National Wildlife Refuge is located in the Town of Newington in southeastern New Hampshire, on the eastern shore of the tidally influenced Great Bay Estuary. This 1,103-acre refuge includes 2 miles of rocky shoreline and is the largest parcel of protected land on the estuary. Great Bay National Wildlife Refuge was established to protect the natural diversity of fish, wildlife, and plants within its boundaries; protect federally-listed species; and preserve and enhance water quality and aquatic habitats. In the three decades prior to refuge establishment, the refuge lands were part of the former Pease AFB. Despite this intensive land use, and its earlier use as a farm, the refuge has a rich diversity of habitat types including oak-hickory forests, grasslands, shrub thickets, freshwater and saltwater wetlands, and open water (USFWS 2012). This unique habitat harbors significant populations of waterfowl, gulls, turkeys, and mammals such as coyotes, red foxes, and white-tailed deer (NHANG 2014).

Seven miles from the mouth of the Piscataqua River is the Great Bay National Estuarine Research Reserve, which encompasses 10,235 acres, 7,000 of which are wetlands and open water (USFWS 2012). The Reserve is part of a national network of protected areas established for long-term research, education, and stewardship. Created under the Coastal Zone Management Act, this partnership program between NOAA and the coastal states protects more than one million acres of the nation’s most important coastal resources. The NHFGD manages the Great Bay National Estuarine Research Reserve, which was designated in 1989.

Odiorne Point State Park is located approximately 8 miles southeast from Pease ANGB. Within the 335-acre seaside park, several distinct habitats hosting a variety of flora and fauna can be found: woodlands, uplands, salt marsh, freshwater and salt ponds, and sandy beach. Most notable to this region are the sunken forests, remnants of the Wisconsin Glaciation; rising temperatures increased the level of seawater, which eventually covered the existing forests. The sunken forest at Odiorne Point is known as the Drowned Forest, which had been a coniferous forest containing white pine and hemlock, approximately 3,500 to 4,000 years ago. A regional map in relation to Pease ANGB is provided in **Figure 3**.

4.0 PHYSICAL ENVIRONMENT

4.1 Climate

The climate of Rockingham County is characterized by large daily and annual temperature variations, typical of the New England coast. Average summer temperatures range from 53-82 degrees Fahrenheit (°F), with the hottest month generally in July (NOAA 2019). The average winter temperatures range from 15-38 °F with the coldest temperatures in January (NOAA 2019). Portsmouth and other coastal areas are influenced by the Atlantic Ocean and the Gulf of Maine, and tend to be slightly moderated (NHANG 2014). Average snowfall in the county is approximately 60 inches per year and the mean precipitation is 51 inches, and is fairly evenly distributed throughout the year (NOAA 2019).

DODI 4715.03 requires the INRMP to assess the potential impacts of climate change on natural resources and to adaptively manage such resources to minimize adverse mission impacts. New Hampshire's climate has warmed two to three degrees in the last century (US EPA 2016). Average annual precipitation has also increased 10 percent since 1895 and corresponding increases in the intensity of storms will likely lead to more severe flooding in the future (US EPA 2016). While flooding is likely to be worse during winter and spring, early snow melt and increases in evaporation are also likely to lead to worse droughts during summer and fall (US EPA 2016).

4.2 Landforms

The regional topography is mostly flat with gently rolling hills with slopes of less than 3%. Topography at Pease ANGB is plateau-like, becoming rolling coastal terrain that typifies the Seaboard Lowland Location in the New England Province of the Appalachian Highlands. Pease ANGB is located on a northwest-trending peninsula surrounded by Great Bay, Little Bay, and the Piscataqua River. The runway is located on a ridge extending in a northwest direction. The ridge is 60-100 feet above mean sea level, and approximately 0.5 miles wide. Other base elevations range from 0-115 feet above mean sea level; however, the majority of the site is reasonably flat with slopes under 5%. The Portsmouth Fault, located approximately 2 miles southwest of Pease ANGB, is an inactive, nearly vertical fault trending northeast-southwest (NHANG 2019a).

4.3 Geology and Soils

The bedrock in Rockingham County consists of granite and mica schist, interspersed with other materials. Pleistocene continental-scale glaciation deposited non-stratified, poorly sorted glacial till, and stratified, water-sorted gravelly glacial outwash, as it receded. A large portion of Rockingham County contains shallow till, and rock outcrops are common. The glacial outwash, less extensive than the till, was deposited by water from the melting glacier (NHANG 2014).

Pease ANGB is underlain by five unconsolidated lithological units, including the Upper Sand, the Marine Clay and Silt, the Lower Sand, and a Glacial Till. Based on observations during subsurface investigations at various Sites on Pease ANGB, the underlying bedrock is known to be the Kittery and Eliot formations. The thickness of the overlying unconsolidated lithological units varies across the base and not all units are present in all areas. In addition, the elevation of the bedrock interface is highly variable as a result of the area's glacial history.

The Natural Resource Conservation Service (NRCS) Soil Survey Map for Rockingham County, NH, Depicts five soil series underlying Pease ANGB **(Figure 6;** NRCS 2019**).** These include the following:

- Windsor Loamy Sand & Pennichuck Hennery Very Fine Sandy Loam - These two soil series are found in the fragmented wooded / naturally vegetated areas of the installation.
- Udorthents – This soil series consists of areas that have been filled with soil material from other locations and graded (i.e. parking lots graded with fill material).
- Urban Land - This soil series consists of land that is completely covered by streets, parking lots, and buildings.
- Urban land-Canton Complex –The urban land and canton soil series occur as areas so intermingled that mapping them separately was not particle. This soils series consists of areas partially covered (approx. 50%) by streets, parking lots, and buildings.

4.4 Hydrology

The area of Pease ANGB lies within the Piscataqua-Salmon Falls Watershed, a sub-basin of the larger Saco Basin and New England Regional Watershed system. Major hydrologic features surrounding Pease ANGB include the Piscataqua River to the north, the Atlantic Ocean to the east, and Great Bay National Estuarine Reserve and Little Bay to the west (**Figure 3**). Surface water runoff on the installation is dominated by a series of drainage swales and storm sewers, further discussed in **Section 7.8.2**. These rivers and creeks include Oyster River to the northwest, Cocheco and Salmon Falls rivers and their confluence with the Piscataqua River to the north, and the Lamprey and Squamscott rivers to the southwest (NHANG 2014).

Generally, groundwater elevations vary seasonally, with high groundwater levels occurring from December-May and low levels from July-September. Groundwater flow direction generally follows surface elevations, however varies during periods of high and low water elevations.

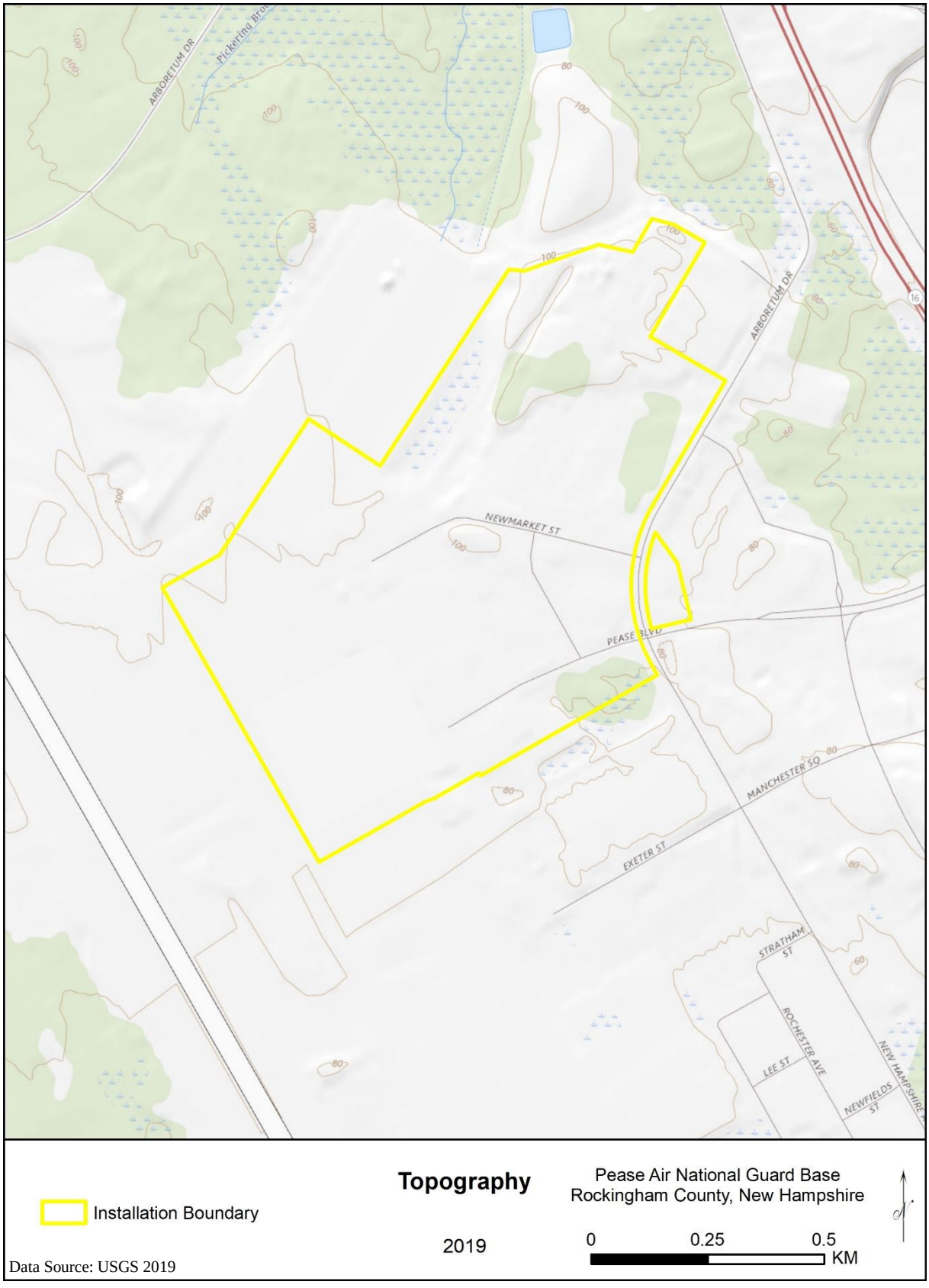

Figure 5. Pease ANGB Topography Map

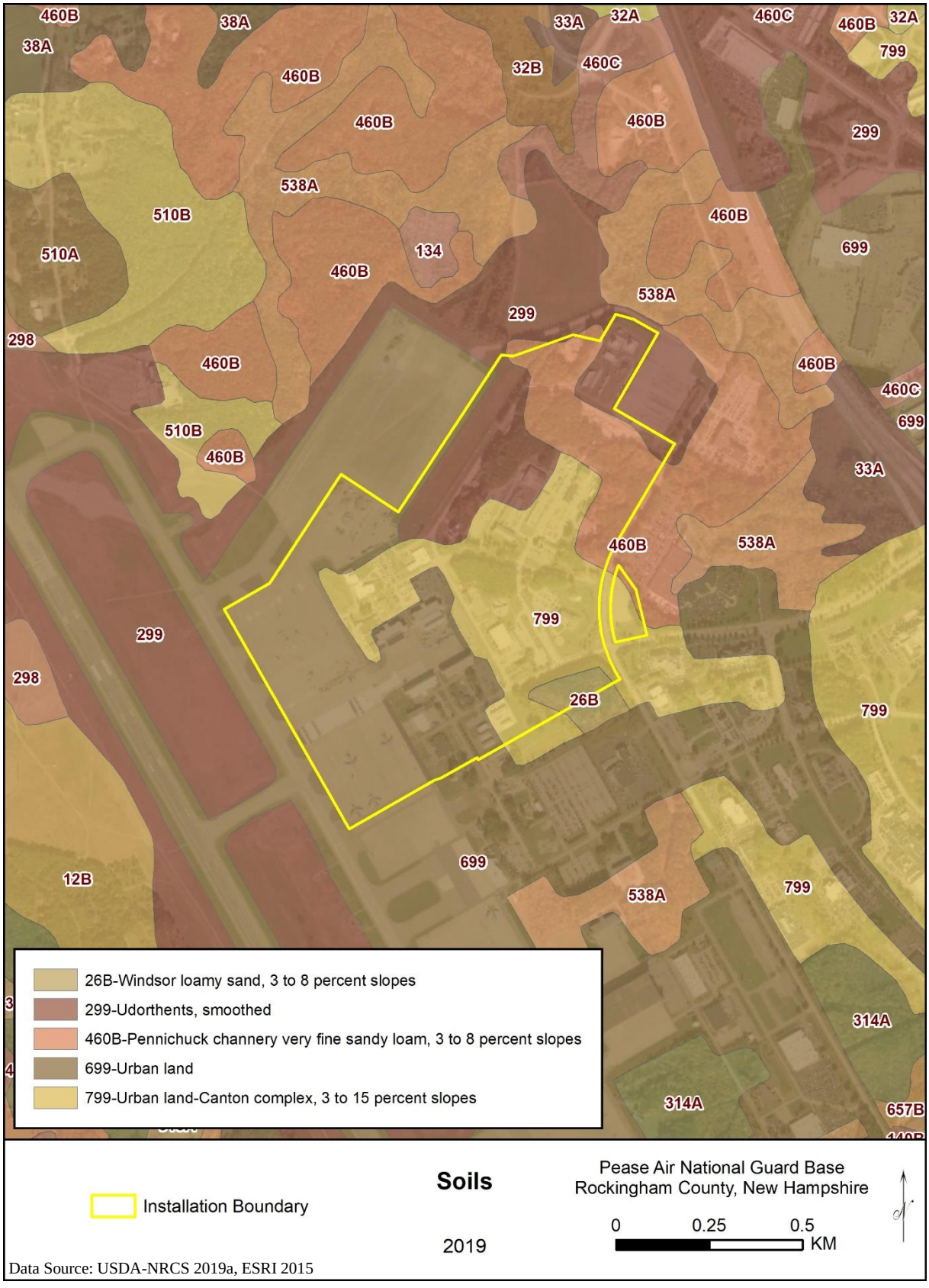

Figure 6. Pease ANGB Soils Map

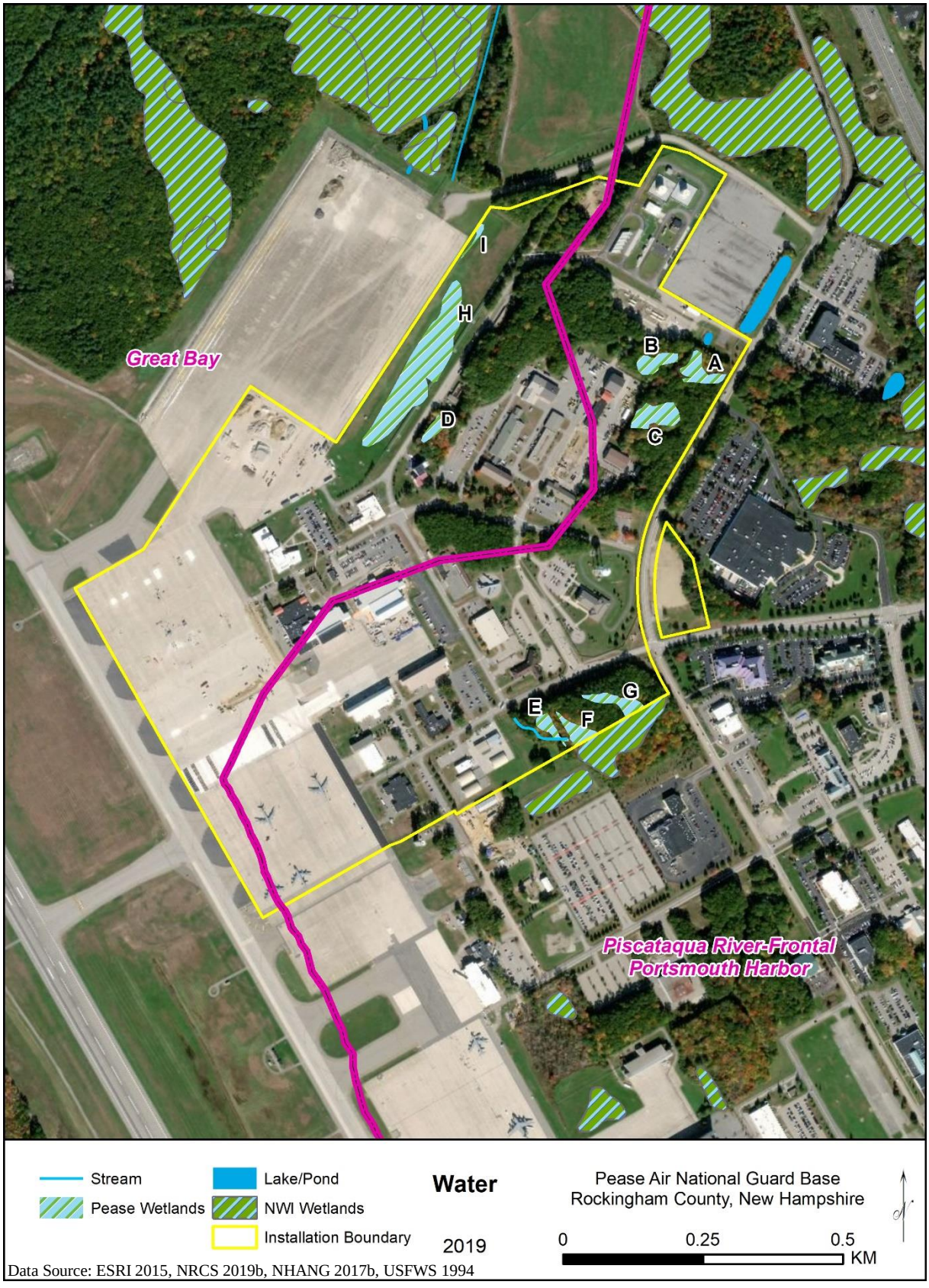

Figure 7. Pease ANGB Water Resources Map

5.0 ECOSYSTEMS AND THE BIOTIC ENVIRONMENT

5.1 Ecosystem Classification

Pease ANGB is located within the Eastern Broadleaf Forest (Oceanic) province ecoregion (NGB 2018). This province is characterized by deciduous forest dominated by tall broadleaf trees and lower layers of sparse small trees and shrubs.

5.2 Vegetation

5.2.1 Historic Vegetative Cover

Historically this area is typified by Eastern Broadleaf Forest Province vegetation, which is characterized by Appalachian oak-pine communities. These communities are dominated by white (*Quercus alba*), black (*Q. velutina*), and scarlet oaks (*Q. coccinea*); hickories (*Carya* spp.); sassafras (*Sassafras albidum*); and scattered pitch pine (*Pinus rigida*) and white pine (*P. strobus*; NHANG 2014).

5.2.2 Current Vegetative Cover

The majority of land at Pease ANGB is developed, with vegetation consisting of maintained landscapes and pockets of forested land. The most recent installation-wide flora and fauna survey was a reconnaissance-level, walkover survey of the entire installation conducted in 2017 (NGB 2018). Preliminary habitat units and primary plant communities were identified using aerial photographs and the results of previous vegetation surveys, then later verified by field crews. Within these units the survey was designed to provide a general inventory of flora and fauna as well as to ensure compliance with federal directives including the ESA, Air Force Policy Directives, AFIs, and DoDIs (NGB 2018). The following information on current vegetative cover is sourced primarily from this survey (NGB 2018) and to a lesser extent the 2017 WOUS and wetlands survey (**Section 5.5**; NGB 2017) as well as associated plans or reports which have a vegetation component.

The airfield turf includes a mixture of grasses such as tall fescue (*Festuca arundinacea*), alkali grasses (*Puccenelia* sp.), other native grasses, and broad-leaved weedy vegetation. The majority of the airfield supports a dense turf which is well established and maintained in accordance with the Pease ANGB BASH plan and the Pease ANGB IPM Plan (NHANG 2019b). Ornamental trees and shrubs near the airfield are selected to reduce attractiveness to hazardous bird and other wildlife species (NHANG 2018).

Natural vegetation on the installation consists primarily of fragmented areas of Appalachian oak-pine forests in the northern and southeastern portions of the installation. Four primary plant communities have been identified for Pease ANGB using the Standardized National Vegetation Classification System (NGB 2018, NHANG 2017a):

- Northern Red Oak-Yellow Birch-Cinnamon Fern Forest: Canopy is dominated by northern red oak (*Quercus rubra*), yellow birch (*Betula alleghaniensis*), red maple (*Acer rubrum*), and the understory by cinnamon fern (*Osmundastrum cinnamomeum*), false lily-of-the-valley (*Maianthemum dilatatum*), and toothed wood fern (*Dryopteris carthusiana*).

- Northern Red Oak-Red Maple-Birch Species-Eastern White Pine Forest: Dominant species include northern red oak, red maple, and white pine (*Pinus strobus*). Common understory plants include highbush blueberry (*Vaccinium corymbosum*) and false lily-of-the-valley.
- Silver maple - American elm forest: Silver maple (*Acer saccharinum*) is the dominant species, along with the occasional American elm (*Ulmus americana*) and red maple. Common understory species include cinnamon fern, toothed wood fern, and false lily-of-the-valley.
- Disturbed, Lawn, and Landscaped Areas: The remaining portions of the installation consist of disturbed, lawn, and other landscaped areas. Typical species include turf grasses (e.g., fescue and bluestem) and ornamental plantings. Trees in these areas include northern red oak, white pine, and pitch pine.

Existing forested areas are found in the northern portion of Pease ANGB, adjacent to the bulk fuel storage area and near the civil engineering and vehicle maintenance buildings (NHANG 2019a). Plant species observed on Pease ANGB are presented in **Table 2.**

Table 2. Plant Species Observed on Pease ANGB

Scientific Name	Common Name	Scientific Name	Common Name
*Acer platanoides**	Norway maple	*Nyssa sylvatica*	blackgum
Acer rubrum	red maple	*Onoclea sensibilis*	sensitive fern
Acer saccharum	sugar maple	*Osmunda cinnamomea*	cinnamon fern
Achillea millefolium	common yarrow	*Osmunda regalis*	royal fern
Alopecurus pratensis	meadow foxtail	*Phalaris arundinacea**	reed canary grass
*Ampelopsis brevipedunculata**	porcelain berry	*Phragmites australis**	common reed
Anemone quinquefolia	nightcaps	*Pinus rigida*	pitch pine
Aralia nudicaulis	wild sarsaparilla	*Pinus serotina*	pond pine
Arisaema triphyllum	jack-in-the-pulpit	*Pinus strobus*	eastern white pine
*Artemisia vulgaris**	common mugwort	*Plantago major*	great plantain
*Berberis thunbergii**	Japanese barberry	*Poa palustris*	fowl bluegrass
*Berberis vulgaris**	common barberry	*Polygonum hydropiperoides*	swamp smartweed
Betula alleghaniensis	yellow birch	*Potentilla simplex*	oldfield cinquefoil
Betula papyrifera	paper birch	*Prunus pensylvanica*	pin cherry
Betula populifolia	gray birch	*Prunus serotina*	black cherry
Carex intumenscens	greater bladder sedge	*Puccenelia sp*	alkali grasses
Carex lupulina	hop sedge	*Quercus alba*	northern white oak
Carpinus caroliniana	American hornbeam	*Quercus bicolor*	swamp white oak
Carya spp.	hickory	*Quercus coccinea*	scarlet oak
*Celastrus orbiculatus**	Oriental bittersweet	*Quercus rubra*	northern red oak
Cicuta maculata	spotted water hemlock	*Rhamnus cathartica**	common buckthorn
Clethra alnifolia	coastal sweetpepperbush	*Robinia pseudoacacia**	black locust
Cornus sericea	red-osier dogwood	*Rosa multiflora**	rambler rose
Cyperus esculentus	yellow nutsedge	*Rubus hispidus*	swamp dewberry

Table 2. Plant Species Observed on Pease ANGB

Scientific Name	Common Name	Scientific Name	Common Name
Dendrolycopodium dendroideum	prickly tree-club-moss	*Rubus idaeus*	American red raspberry
Deschampsia cespitosa	tufted hairgrass	*Rubus invisus*	upland dewberry
Dryopteris carthusiana	spinulose woodfern	*Sambucus nigra*	American black elderberry
Dryopteris cristata	crested woodfern	*Scirpus cyperinus*	woolgrass
*Elaeagnus umbellate**	autumn olive	*Smilax rotundifolia*	common greenbrier
Eurybia divaricata	white wood aster	*Sorbus americana*	American mountain-ash
Fagus grandifolia	American beech	*Spiraea alba*	white meadowsweet
Festuca arundinacea	tall fescue	*Spiraea tomentosa*	steeplebush
Festuca rubra	red fescue	*Symphyotrichum lateriflorum*	calico aster
Fraxinus pennsylvanica	green ash	*Taraxacum officinale*	common dandelion
Gaultheria procumbens	eastern teaberry	*Thelypteris palustris*	eastern marsh fern
Gaylussacia baccata	black huckleberry	*Toxicodendron radicans*	poison ivy
Geranium carolinianum	Carolina geranium	*Trientalis borealis*	star flower
Hamamelis virginiana	American witchhazel	*Trifolium pratense*	red clover
Ilex verticillata	common winterberry	*Trifolium repens*	white clover
Impatiens pallida	pale touch-me-not	*Tsuga canadensis*	eastern hemlock
Iris versicolor	harlequin blueflag	*Ulmus americana*	American elm
Juncus effusus	common rush	*Vaccinium corymbosum*	highbush blueberry
Juniperus communis	common juniper	*Verbascum thapsus**	common mullein
*Lonicera morrowii**	Morrow's honeysuckle	*Viburnum dentatum*	southern arrowwood
Lycopodium dendroideum	tree groundpine	*Viburnum lantanoides*	hobblebush
Maianthemum canadense	false lily-of-the-valley	*Viburnum lentago*	nannyberry
Maianthemum stellatum	star-flowered lily-of-the-valley	*Vicia cracca**	bird vetch
Malus sp.	apple	*Vicia sativa*	garden vetch
Mitchella repens	partridgeberry		

Source: ANG 2011; NGB 2017, 2018; NHANG 2019a; NHDA 2017
*****Noxious or invasive non-native plant species

5.3 Fish and Wildlife

Due to the fragmented nature of vegetation on Pease ANGB, high noise levels, and human activities at and surrounding the airport, wildlife habitat is fragmented within the installation boundary. However, due to the surrounding forested areas of the Great Bay National Wildlife Refuge there are more species with the potential to occur on Pease ANGB than those species that have been observed. Some nesting, roosting, denning, and breeding sites are found in grassland, woodland, and wetland areas on the installation. The forested patches provide the only significant cover and shelter on Pease ANGB which can harbor turkeys, foxes, and woodchucks. The majority of wildlife present at the airport and the Pease ANGB installation consists of species highly adapted to developed and disturbed areas or those that utilize Pease ANGB in a transient fashion (NHANG 2019a).

A 2018 wildlife survey and observations made by USDA-WS and other installation personnel identified 48 bird species, 16 mammals, and 7 insect species on Pease ANGB (NGB 2018). A 2018 bat survey determined that 2 species, the big brown bat (*Eptesicus fuscus*) and the eastern red bat (*Lasiurus borealis*), are present on base. These species were both identified via mist-netting and acoustic surveys. An additional 2 species were only acoustically detected, the eastern small-footed *Myotis* (*Myotis leibii*) and the little brown bat (*Myotis lucifugus*), however due to few acoustic detections of these bats relative to other species their densities are assumed to be very low and likely only present on Pease ANGB in a transient fashion (Normandeau Associates 2018). Due to these few acoustic detections, another bat survey may be required to determine species present on the installation. In addition to these studies, various birds and mammals have been observed on Pease ANGB. These include 3 avian species of management concern: the bald eagle (*Haliaeetus leucocephalus),* the upland sandpiper (*Bartramia longicauda*), and the peregrine falcon (*Falco peregrinus*; NHANG 2014). **Table 3** lists all wildlife species observed on Pease ANGB.

Table 3. Wildlife Species Observed on Pease ANGB.

Scientific Name	Common Name	Scientific Name	Common Name
Birds			
Agelaius phoeniceus	Red-wing blackbird	*Hirundo rustica*	Barn swallow
Ammodramus savannarum	Grasshopper sparrow	*Larus argentatus*	Herring gull
Anas platyrhynchos	Mallard	*Larus delawarensis*	Ring-billed gull
Ardea herodias	Great blue heron	*Larus marinus*	Great black-backed gull
Bartramia longicauda	Upland sandpiper	*Meleagris gallopavo*	Wild Turkey
Branta canandensis	Canada goose	*Melospiza melodia*	Song sparrow
Bubo scandiacus	Snowy Owl	*Mimus polyglottos*	Northern mockingbird
Buteo jamaicensis	Red-tailed hawk	*Pandion haliaetus*	Osprey
Cardinlis cardinalis	Northern cardinal	*Passer domesticus*	House Sparrow
Cathartes aura	Turkey vulture	*Phalacrocorax auritus*	Double-crested cormorant
Charadrius vociferus	Killdeer	*Picoides pubescens*	Downy woodpecker
Circus cyaneus	Northern harrier	*Plectrophenax nivalis*	Snow Bunting
Colaptes auratus	Northern flicker	*Poecile atricapillus*	Black-capped chickadee
Columba livia	Rock Dove	*Scolopax minor*	American Woodcock
Contopus virens	Eastern wood peewee	*Sialia sialis*	Eastern bluebird
Corvus brachyrhynchos	American crow	*Sitta carolinensis*	White-breasted nuthatch
Cyanocitta cristata	Blue jay	*Spinus tristis*	American goldfinch
Dumetella carolinensis	Gray catbird	*Spizell arborea*	American tree sparrow
Falco peregrinus	Peregrine falcon	*Spizella passerina*	Chipping sparrow
Falco sparverius	American kestrel	*Sturnus vulgaris*	European starling
Fulica americana	American coot	*Turdus migratorius*	American robin
Haemorhous mexicanus	House finch	*Tyrannus tyrannus*	Eastern kingbird
Haliaeetus leucocephalus	Bald eagle	*Zenaida macroura*	Mourning dove
Mammals			
Canis latrans	Coyote	*Odocoileus virginiana*	White-tailed deer
Eptesicus fuscus [1]	Big brown bat	*Peromysus leucopus*	White-footed mouse
Lasiurus borealis [1]	Eastern red bat	*Peromysus maniculatus*	Deer mouse
Marmota monax	Woodchuck	*Procyon lotor*	Raccoon
Mephitis mephitis	Striped skunk	*Sciurus carolinensis*	Grey squirrel
Mus musculus	House mouse	*Sorex spp.*	Shrews
Myotis leibii [2]	Eastern small footed Myotis	*Tamias striatus*	Eastern chipmunk
Myotis lucifugus [2]	Little brown bat	*Vulpes vulpes*	Red fox
Insects			
Colias philodice	Clouded sulphur	*Gryllus pennsylvanicus*	Field cricket
Culex sp.	Mosquito	*Micrathena sp.*	Micrathena spider
Dermacentor variabilis	American dog tick	*Pieris rapae*	Cabbage white
Diapheromera femorata	Northern walking stick		

Source: NGB 2018, NHANG 2019a, 2018, 2014, Normandeau Associates 2018

1. Species netted on Pease ANGS in 2018 (NGB 2018, Normandeau Associates 2018)
2. Species acoustically detected in 2018 (Normandeau Associates 2018)

5.4 Threatened and Endangered Species and Species of Concern

No federally or state endangered or threatened species are known to occur on Pease ANGB. Federally listed species with the potential to occur on Pease ANGB include the:

- Threatened northern long-eared bat (*Myotis septentrionalis*)

State special status species occurring or with the potential to occur on Pease ANGB include the:

- Endangered upland sandpiper
- Endangered northern harrier (*Circus cyaneus*)
- Endangered little brown bat
- Endangered eastern small-footed *Myotis*
- Threatened grasshopper sparrow (*Ammodramus savannarum*)
- Threatened peregrine falcon
- Threatened eastern meadowlark (*Sturnella magna*).
- Special status bald eagle

The only known nesting population of the upland sandpiper in New Hampshire is found on grassy islands within the runway and taxiways at PSM. The state-threatened grasshopper sparrow has also been observed in the mowed and un-mowed grassland areas at PSM. Lastly, the bald eagle, which is no longer a federally listed species but is state-listed and still receives protection under the Bald and Golden Eagle Protection Act (BGEPA), was documented on PSM (NHANG 2019a, 2014).

Pease ANGB is located within the Atlantic Flyway, one of the four major North American migratory corridors, so migratory bird occurrence on the installation is possible (NHANG 2019a). The USFWS identifies Birds of Conservation Concern (BCC), a subset of the Migratory Bird Treaty Act (MBTA), species that are considered those in greatest need of additional conservation. Two BCC have been identified for Pease ANGB, the upland sandpiper, and the peregrine falcon (NHANG 2019a, 2014). **Table 4** summarizes threatened and endangered species and species of concern that have been documented on Pease ANGB.

Table 4. Threatened and Endangered Species and Species of Concern Documented on Pease ANGB or PSM Runway.

Scientific Name	Common Name	State Status	Federal Status
Ammodramus savannarum	Grasshopper sparrow	T	
Bartramia longicauda	Upland sandpiper	E	BCC
Circus cyaneus	Northern harrier	E	
Falco peregrinus	Peregrine falcon	T	BCC
Haliaeetus leucocephalus	Bald eagle	T	BGEPA, BCC
Myotis lucifugus	Little brown bat*	E	
Myotis leibii	Eastern small footed *Myotis**	E	

Source: NGB 2018, NHANG 2019a, 2018 2014, NHFGD 2019, Normandeau Associates 2018, USFWS 2019a,
* Acoustically detected only
BCC- Migratory Bird Treaty Act Birds of Conservation Concern
BGEPA – Bald and Golden Eagle Protection Act
T – Threatened
E - Endangered

5.5 Waters of the US, Wetlands, Groundwater, and Floodplains

In 2017 a WOUS and wetland survey was conducted in accordance with the 1987 US Army Corps of Engineers (USACE) Wetlands Delineation Manual, Technical Report Y-87-1 (Environmental Laboratory 1987), along with subsequent rules and guidelines outlined in the Northeast Regional Supplement (USACE 2012; NHANG 2017a). A total of 9 jurisdictional wetlands were identified, with a combined area of 7.32 acres, and 1 jurisdictional stream (NHANG 2017a). The USACE reviewed and concurred with these findings by issuing a letter and an approved jurisdictional determination (JD), dated November 29, 2017 (NHANG 2017a). That verification is valid for a period of five year and will expire in 2022. All wetlands observed were characterized as belonging to the Palustrine wetlands system within the Palustrine Emergent (PEM) or Palustrine Forested (PFO) classes. These wetlands are non-tidal and are characterized by trees, shrubs, persistent emergent, mosses, or lichens. A summary of delineated wetlands on Pease ANGB along with type and acreage is presented in **Table 5**. Locations of wetlands and Stream 1 on Pease ANGB are shown in **Figure 7**. Any proposed activities which may cause disturbance to WOUS and wetlands will require coordination and possibly permitting through the USACE and/or NHDES. For more information on WOUS and wetlands permitting and regulatory requirements refer to **Section 7.3.1** and for goals and projects see **Section 8**.

Photo of Stream 1
Photo by NGB 2018

Table 5. Summary of Wetlands and Surface Water Features at Pease ANGB		
Feature	**Size (acres)**	**Wetland Type**
Wetland A	0.67	PFO
Wetland B	0.48	PFO
Wetland C	0.78	PFO
Wetland D	0.27	PFO
Wetland E	0.33	PFO
Wetland F	0.42	PFO
Wetland G	0.48	PFO
Wetland H	3.76	PEM
Wetland I	0.14	PEM
Stream 1	0.03	-

Source: NHANG 2017a
PFO = Palustrine Forested
PEM = Palustrine Emergent

The wetland functions and values assessment was conducted using the USACE New England District's The Highway Methodology Workbook Supplement: Wetlands Functions and Values, A Descriptive Approach (USACE 2015). This method considers the function and values of wetlands and indicated that the 9 wetlands at Pease ANGB exhibit one or more of the following functions: groundwater recharge/discharge, flood flow alteration, sediment/ toxicant retention, nutrient removal, wildlife habitat, recreation, and visual quality/ aesthetics. The most common and qualitatively highest value function provided by the assessed wetlands is flood flow alteration (NHANG 2017a).

A Groundwater Management Zone (GMZ) is a designation used by NHDES to denote a three-dimensional region containing groundwater being managed to moderate impairment caused by the release of contaminants from a site such that the discharge of contaminants becomes regulated, contained, and managed. There are currently four active GMZs located on the installation, as mandated by the NHDES. The source of contaminants in the four GMZs on the installation include the Flightline, Building 249 (an Aerospace Ground Equipment shop), Fuel Vault #4 Spill Response Site, and the Bulk Fuels Storage Area (NHANG 2019a).

There are no floodplains within the boundary of the PSM or within the Pease ANGB (FEMA 2015). Per the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panels No. 33015C0255E and 33015C0260E, PSM is located within an area designated as Zone X, indicating areas determined to be outside of the 500- and 100-year flood (FEMA 2015). The Great Bay, an area designated as Zone AE, abuts PSM property along its southwest boundary and is a special flood hazard area subject to inundation by a 1% chance of the 100 year flood occurring.

6.0 MISSION IMPACTS ON NATURAL RESOURCES

6.1 Natural Resources Needed to Support the Military Mission

The Pease ANGB requires operational areas that support flying operations, facilities, and other support functions, with the surrounding areas serving as a buffer to reduce BASH risk and provide support facilities and functions. 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 Pease ANGB needs the land and its natural resources to function together in a healthy ecosystem to support the military mission. Management activities in this INRMP are designed to support the desired habitats and ecosystem functions.

6.2 Natural Resources Constraints to Mission and Mission Planning

The most significant natural resource constraints to the Pease ANGB mission are related to wetlands and streams, reducing BASH risk, and state-listed species. The potential negative impacts to the installation's flying mission or future planning operations could range from a delay in the construction of new buildings to a loss of life as a result of severely damaged aircraft. The primary natural resources constraints to installation planning and the military mission on Pease ANGB include:

- Projects that may result in impacts to WOUS including wetlands will obtain Section 404 federal permits and Section 401 State Water Quality Certification in addition to any state permits required to impact waters of the state including wetlands.
- BASH risk must be considered in the planning and execution of projects on Pease ANGB because the installation possesses populations of, and habitat features that are attractive to, high BASH threat species.

6.2.1 Land Use

Pease ANGB encompasses 216 acres of land which is federally owned and licensed to the ANG, all of which are in the Town of Newington, which is located along the northern portion of the PSM property. Of the 216 acres, approximately 37% of the installation are natural vegetated areas (NHANG 2019a). The majority is developed or semi-developed and are comprised of the NHANG's portion of the aircraft parking apron, taxiway, facilities, sidewalks, driveways, parking lots and roadways (NHANG 2014).

The 157 ARW is in the process of updating and improving facilities and land use planning on the installation as part of the new KC-46 weapon system. The ANG employs a classification system of 8 land use categories modified from the USAF system for specific use. Of the 8 categories, 7 are currently used at Pease ANGB: Airfield Pavement Area, Aircraft Operations, Aircraft Maintenance Facilities, Industrial Facilities, Command and Support Facilities, Special Categories, and Open Space. **Figure 4** provides an overview of Pease ANGB.

Pease IPT and its immediate surroundings are zoned for industrial, light industrial, and airport use by the cities of Portsmouth and Newington, NH (Town of Newington 2015; City of Portsmouth 2019). The remaining surrounding areas are zoned primarily for rural and business uses. Areas zoned for natural resources protection are located in scattered parcels to the south east and east including state and municipal parks (City of Portsmouth 2019). To the south west, and bordering

the airport property, the Great Bay National Wildlife Refuge is zoned for natural resources protection. For additional information on surrounding natural areas see **Section 3.5**.

6.2.2 Current Major Impacts

Other than impacts from day-to-day operations listed in this INRMP, the following are potential sources of impact to natural resources from installation activities. The methods and practices in this INRMP and its associated plans are implemented to mitigate or avoid these impacts.

6.2.2.1 Hazardous materials and wastes

Hazardous materials are those substances defined as hazardous by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA). In general, hazardous materials include substances that, because of their quantity, concentration, physical, chemical, or infectious characteristics, could present substantial danger to public health or welfare or the environment when released. The operation of aircraft, vehicles, and equipment requires the use of various hazardous materials including fuels, solvents, and lubricants. If released, these materials have the potential to harm the environment by impacting air, soil, or water quality.

Hazardous materials and wastes are federally regulated by the US EPA, in accordance with the Federal Water Pollution Control Act, the Clean Water Act (CWA), the Solid Waste Disposal Act, the Toxic Substances Control Act (TSCA), RCRA, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the Clean Air Act (CAA). Hazardous materials used throughout the Pease ANGB are documented in the Hazardous Waste Management Plan and the SPRP (NHANG 2016, NHANG 2017b).

The Hazardous Materials Pharmacy (HAZMART), building 258, is the primary storage facility for hazardous materials on the installation. While shops maintain a small amount of hazardous materials, the HAZMART functions as the central bulk storage area. The HAZMART encompasses both the storage facility and an established set of procedures designed to control the acquisition, storage, issue, and disposition of serviceable hazardous materials (NHANG 2019a). Working in coordination with the Environmental Management office, the HAZMART ensures that best management and mitigation practices are followed to reduce risk to natural resources from hazardous materials.

Although the US EPA classifies the installation as a Small Quantity Generator under RCRA, the installation is permitted as a Full Quantity Generator (i.e., generates equal to or greater than a total of 100 kilograms [220 pounds] of hazardous waste in any single calendar month) by the State of New Hampshire (#NH8572824847; NHANG 2019a). The 157 ARW follows the more stringent Full Quantity Generator requirements of New Hampshire (NHANG 2019a).

The 157 ARW maintains a Hazardous Waste Management Plan (NHANG 2016) as well as an SPRP (NHANG 2017b) to provide avoidance and mitigation strategies, best management practices as well as outline responsibilities for implementing these plans and strategies.

Wastewater – Wastewater generated at Pease ANGB gravity flows off-site to the City of Portsmouth Department of Public Works sewer system.

Solid waste – Municipal solid waste generated at the installation is collected by contractors and disposed of or recycled. Construction and demolition debris is also disposed of by contractors. In accordance with AFI 32-7080, *Pollution Prevention Program*, and AFI 32-7042, *Waste Management*, ANG requires its installations to strive to divert/recycle the following additional items from the waste stream as cost effectively as possible: asphalt, metals, plastic, glass, used oil, lead acid batteries, and tires (NHANG 2019a).

Oil and fuel storage – Oil and fuel storage on the installation supports aircraft and ground vehicle operation and maintenance (NHANG 2017b). The following fuels are stored on the installation, gasoline, diesel fuel, engine oil, jet fuel, hydraulic fluid, transformer oil, heating oil, propane, waste oils and sludge, and used cooking oils (NHANG 2017b). Storage on the installation includes underground storage tanks (UST), aboveground storage tanks, electrical operating equipment, generator day tanks, 55-gallon drums, and smaller containers (NHANG 2017b). Currently, pipelines carrying fuel to the flight line are arranged as a closed loop with issue and return lines. The fuel hydrant system was recently updated in 2018. For more information regarding fuel storage and management on Pease ANGB refer to the Pease ANGB SPRP (NHANG 2017b).

6.2.2.2 Environmental Restoration Program Sites

The Environmental Restoration Program (ERP) was developed by the DoD to identify and address environmental contamination from past military operations. Future development of sites identified through the ERP program might be constrained depending on the severity of the contamination or the extent of the remedial action required. The overall objective of the ERP is to identify potential environmental problems and provide timely remedies to protect public health and the environment.

There have been several sites located within the Pease ANGB boundary and managed by the 157 ARW (NHANG 2019a). Sites 31 and 44 and have been closed since September 1995 and all records for these sites are maintained in the Pease ANGB Administrative Record.

Site 76 –- Tank 249.10 was a 1,000-gallon UST that held petroleum product recovered by the 3,000-gallon Oil Water Separator. Benzene and/or naphthalene concentrations in groundwater continue to exceed the New Hampshire Ambient Groundwater Quality Standards in source area wells. Ground water monitoring is ongoing (NHANG 2019a).

Fuel Spill Response Site (NHDES Site #199207015) – The site is associated with a 2004 spill of approximately 9,000 gallons of Jet Propellent-8 jet fuel from fuel supply Vault #4. Interim remedial measures at the site have included product recovery and operation of an air sparging/soil vapor extraction system. The site is undergoing annual groundwater monitoring to assess the groundwater quality and ongoing natural attenuation. An October 2017 *Draft Final Remedial Action Plan Addendum* proposed natural attenuation/long-term monitoring as the recommended remedy. This remedy would also require maintaining the current Groundwater Management Permit and preventing direct contact with contaminated soil or groundwater 18 feet to 25 feet below ground surface by controlling construction activities at the site through 157 ARW “work clearance request” protocols. These protocols require review and input from the Base EM for any construction projects that require digging (Air Force Civil Engineer Center, 2017).

Additionally, as part of the overall ERP, the installation is also currently investigating potential contamination related to the chemicals perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). The detection of PFOS/PFOA at DoD facilities is often linked to the use of aqueous film-forming foam, which may contain one or more of these chemicals. Aqueous film-forming foam is a firefighting agent used to suppress fires involving petroleum hydrocarbons.

In 2013, sampling work at Fire Department Training Area-2 (Site 8), located on PDA property, detected PFOA and PFOS above the US EPA Provisional Health Advisory in site groundwater. In 2015, the USAF was issued an Administrative Order by US EPA under the Safe Drinking Water Act to investigate and remediate the PFOA/PFOS sources, restore the Pease aquifer, treat the Haven well, and monitor and protect residential and water supply wells. The USAF is conducting work to satisfy the requirements and schedule specified in the Order. In addition, the USAF has begun a Remedial Investigation/Feasibility Study under the CERCLA process to evaluate potential risk pathways not otherwise addressed by the order (NHDES 2017; NHANG 2019a).

6.2.2.3 New Hampshire Department of Environmental Services Notices of Violation

As of August 2019, Pease ANGB has two remaining deficiencies of 16 received in Notices of Violation from the NHDES in 2009 and 2010:

- The existing grounds fuels service station has no secondary containment for the gasoline and diesel tanks, which is required by NHDES. The plan to replace the entire gas station is at 95% design (NHDES notice of violation received 06/12/2009).
- The underground aircraft hydrant fueling system does not have the necessary secondary containment or interstitial monitoring system required by the NHDES. The underground hydrant fueling system correction is at 35% design (NHDES notice of violation received 08/26/2010).

Work to correct these deficiencies is ongoing and will be addressed as funding becomes available (NHANG 2010; NHDES 2011).

6.2.3 Potential Future Impacts

Future mission impacts at Pease ANGB would primarily include those already associated with current mission activities as described in this INRMP. Other anticipated impacts are from proposed future construction or short-term infrastructure improvements at Pease ANGB which have also undergone a NEPA review process and fall into one of three categories:

- Short-term facilities construction intended to streamline operations and comply with minimum antiterrorism standards set forth by the DoD.
- Airfield-related maintenance and infrastructure alternations to enable compliance with airfield safety requirements (UFC 3-260-01, Airfield and Heliport Planning and Design).
- Demolition projects required to enable the execution of short-term construction and infrastructure alterations.

The proposed construction projects would occur primarily in previously disturbed areas that are not favorable habitat for sensitive species and projects will follow management requirements to minimize impacts to biological resources (NHANG 2017a; NHANG 2019a). The proposed construction projects will increase impervious surfaces and could result in increased stormwater runoff and sedimentation during construction-related activities (NHANG 2017a; NHANG 2019a).

Therefore these projects would be subject to National Pollutant Discharge Elimination System (NPDES) permitting including the establishment of SWPPPs.

7.0 NATURAL RESOURCES PROGRAM MANAGEMENT

7.1 Natural Resources Program Management

The guiding philosophy of the Pease ANGB INRMP is to take an ecosystems approach to managing natural resources. Ecosystem management is based on clearly stated goals and objectives, and associated projects. The Pease ANGB INRMP identifies goals and objectives, and presents the means to accomplish them as well as the methodologies to monitor results. Natural resources management on Pease ANGB will support and minimize impacts to the military mission while:

- Complying with all applicable federal and state laws, and USAF regulations and policies
- Managing and minimizing soil disturbance and erosion while protecting downstream major water bodies
- Managing plant and animal wildlife populations through the creation of specific monitoring and management plans.
- Managing for threatened and endangered listed species through regular monitoring and the development of a monitoring and management plan including management strategies as needed
- Managing wetland resources to achieve no net loss of acreage or function and values
- Minimizing impacts to natural resources from invasive and pest species by utilizing an IPM approach

7.2 Fish and Wildlife Management

Wildlife management involves manipulating various aspects of an ecosystem to benefit chosen wildlife species. Management of habitat can be performed in a manner that enhances biodiversity through the conservation or reestablishment of native habitats. Conversely, habitat management might be required to decrease the abundance of certain wildlife species to reduce animal damage or bird strike hazards. The installation's limited size necessitates implementation of wildlife management options that do not increase the potential for wildlife-mission conflicts but still conserve regional biodiversity. Wildlife population and habitat management on Pease ANGB will:

- Maintain a flora and fauna inventory.
- Minimize BASH risk by supporting BASH management on the installation and coordinate efforts with the USDA-WS
- Create and implement a Wildlife Monitoring and Management Plan.
- Conduct surveys to assess diversity and population numbers of migratory birds in conjunction with wildlife specialist.

7.2.1 Federal Wildlife Policies and Regulations

Endangered Species Act

The ESA 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.

Migratory Bird Treaty Act

The 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 BGEPA (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

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.

The USAF Pollinator Conservation Reference Guide provides specific pollinator conservation measures which can be implemented by the USAF and ANG. It was finalized March 2018, and is available on USFWS and AFCEC eDASH Natural Resources website. This 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, BCC, bees, and monarch butterflies), and native plant recommendations specific to ecoregions.

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.

7.2.2 Nuisance Wildlife and Wildlife Diseases

Other than those that present a BASH risk, there are few nuisance wildlife species at Pease ANGB. Future nuisance wildlife problems will be evaluated in conjunction with USDA-WS and PDA personnel, if appropriate. Any solutions to hazardous wildlife problems will follow the Pease ITP WHMP (Pease ITP 2017), and the BASH Plan (NHANG 2018).

Diseases affecting wildlife may occur on the installation. Any large-scale wildlife deaths and unnatural behavior occurring on the installation will be reported, recorded, and investigated, in conjunction with USFWS, USDA-WS, and NHFGD personnel, as appropriate.

7.2.3 Management of Threatened and Endangered Species and Habitats

This section presents information about federal and state-listed species present or with the potential to occur at Pease ANGB, 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 1 federal and 8 state special status species either present or with the potential to occur at Pease ANGB.

7.2.3.1 Federally Special Status Wildlife Species

No federally listed threatened or endangered species have been observed on Pease ANGB. The northern long-eared has been documented nearby on Great Bay NWR property (USFWS 2012) but is not likely to occur on the installation. If listed species are discovered at Pease ANGB, a management plan that presents and implements strategies to benefit listed species present and those with suitable habitat on the installation should be developed. Pease ANGB will coordinate the appropriate management strategies and other courses of action with NHFGD and USFWS.

Northern-long eared bat: The northern long-eared bat is federally listed as threatened. It has not been detected on Pease ANGB and is likely not present given its habitat requirements (Normandeau Associates 2018). It has however, been documented nearby on Great Bay NWR property and may utilize the installation in a transient nature in the future (USFWS 2012). The northern long-eared bat is a medium-sized bat with medium to dark brown back fur, and tawny to pale-brown fur on their underside (USFWS 2019b). It is distinguished by its long-ears in comparison to other *Myotis* species (USFWS 2019b). Winter hibernacula include caves and abandoned mines. In summer the northern long-eared bat is flexible in its roost selection choosing cavities and crevices in both live trees and snags (dead trees), as well as manmade structures such as bridges and abandoned buildings (Kentucky Working Group 2012). This species forages in the open and uncluttered forest understories of woodlands, along woodland edges, and along water, for a variety of insect prey (Kentucky Bat Working Group 2012).

Northern Long-eared Bat
Photo by Steve Taylor-University of Illinois

Since Pease ANGB is within the historic northern long-eared bat range, activities/ projects involving tree clearing require consultation under the ESA. A streamlined framework under the 4(d) rule to address these impacts can be found at: https://www.fws.gov/Midwest/endangered/mammals/nleb/s7.html.

Since there are no federally-listed species identified on Pease ANGB, the following are general recommended strategies for federally listed species management on Pease ANGB:

- Continue to conduct periodic species surveys, including surveys targeting federal and state-listed species with the potential to occur at Pease ANGB, to determine the presence of any listed species.
- Maintain an up-to-date list of federal and state-listed species that are present in the region by annually consulting with federal and state agencies. Compare any flora and fauna survey findings to federal and state lists and their associated habitat annually.
- If listed species are discovered at Pease ANGB, develop a plan that presents and implements strategies to benefit listed species present and those with suitable habitat on

the installation. Coordinate the appropriate management strategies and other courses of action with NHFGD and USFWS.

7.2.3.2 State Special Status Species

New Hampshire state law provides for the protection of native threatened and endangered species. Additionally, AFI 32-7064 directs that INRMPs provide for the protection and conservation of state-listed protected species when such protection is not in direct conflict with the military mission. A total of 7 state-listed species have been observed and documented on Pease ANGB or in the immediate vicinity on PSM. Other than fish and wildlife management strategies in **Section 7.2**, there are no specific management strategies identified for state-listed species on Pease ANGB.

Upland sandpiper
Photo by Michael J. Anderson

Upland sandpiper**:** The upland sandpiper is listed as endangered by the state of New Hampshire and is also a USFWS BCC. The only known nesting population of the upland sandpiper in New Hampshire is found on grassy islands within the runway and taxiways at PSM. While nests were not found within Pease ANGB, no nest survey has been completed and there is potential for birds to forage within open fields and mowed areas on the property. This is a slender, moderate-sized shorebird with a small head, large shoe-button eyes, short and thick dark brown bill, long, thin neck and relatively long tail. The sexes are similar in size and coloration (Cornell lab of Ornithology 2019). The species needs a mix of short (less than 8 in) and tall (up to 23 in) grasses for foraging and nesting, respectively. Taller structures such as fence posts, runway lights or signs, and taller forbs such as mullein are needed for singing perches. Upland sandpipers avoid grasslands with high densities of legumes or with a dense litter layer. They require large areas of grassland for breeding. Ideally, such fields should be over 150 acres, and even fields as large as 300 acres may not necessarily be large enough to support the species (NHFGD 2015).

Northern harrier
Photo by Gregg Thompson

Northern harrier: The northern harrier is listed as endangered by the State of New Hampshire. This species is a slim, long-legged, long-tailed hawk with an owl-like face and long, rounded, narrow wings extending up to 46 inches. Males have bluish gray on the head and upper surface, white on the undersurface with black wing tips; the tail has a broad subterminal bar with 5 to 7 narrower dark brown bars. Females are dusky brown on the head and upper surface, and light brown with darker vertical streaks on the lower surface; the tail is dark in the center becoming paler near the outer edges, and has 5 to 7 broad brown bars. Both sexes possess a conspicuous white rump patch, white upper tail coverts, light orange- yellow legs and black bills.

Northern harriers are known to readily abandon nests when disturbed before the eggs hatch, but vigorously defend the nest after their young have hatched. Nests are usually located in slightly hollowed-out areas on the ground, among bushes, grasses and other low vegetation. Sometimes the nest is built over shallow water on a raised mound of sticks. Both parents help incubate the eggs until they hatch 30 to 32 days later. Fledging occurs 30 to 35 days after hatching (ADW 2019).

Little brown bat
Photo by USFWS

Little brown bat: The little brown bat is listed as endangered by the State of New Hampshire. This species is dark, golden, reddish to olive brown with glossy fur. They weigh between 0.2-0.5 oz. with a length that varies 2.4-4 in and a wingspan between 8.7-10.6 in. Females are larger than the males, especially during the winter. They are found throughout North America although they are now primarily found in the northern United States and Canada. They live in large colonies numbering in the hundreds of thousands of individuals and inhabiting 3 different types of roost sites, day, night, and hibernation roosts. Potential roost sites include buildings, caves, trees, rocks, and wood piles (ADW 2019; NWF 2019). Day roosts typically have southwestern exposures to provide heat for arousal from daily torpor and will typically provide good shelter and block out light. Night roosts must provide protected spaces where large concentrations of bats can cluster together are usually located away from day roosts. Hibernaculum sites are typically caves where temperature is continuously above freezing and humidity is high. (ADW 2019). Little brown bats live approximately 6-7 years, but males are not sexually mature until after their first year. Swarming at the hibernacula occurs during late summer and fall with activity decreasing with lower temperatures. They are nocturnal and primarily insectivorous, feeding on flying insects in wooded areas, fields, and over water (ADW 2019).

Eastern small-footed *Myotis*
Photo by Gary Peeples - USFWS

Eastern small-footed *Myotis*: The eastern small-footed *Myotis* is listed as endangered by the state of New Hampshire. This species is relatively small, 0.12-0.21 oz. with a length of approximately 3 in and a wingspan of 8.3-9.8 in. The sexes are similar in coloration and size with brown tipped black fur. They are widely distributed throughout the United States and Canada but are one of the rarest bats in North America. In spring and summer they occupy a wide variety of roosting sites including in buildings, bridges, caves, mines, in hollow trees, tunnels, rock crevices, and beneath rocks or in rocky outcrops. They seek out hibernacula that are colder and shorter than those chosen by other *Myotis* species. Swarming, breeding, and hibernacula selection occur from late summer

through early fall. They will continue to return to the same breeding spot throughout the breeding season (ADW 2019). Eastern small-footed *Myotis* bats live from 6-12 years in the wild. They are nocturnal and are primarily insectivores. Their prey include beetles, mosquitos, moths, and flies (ADW 2019).

Bald Eagle
Photo by Joseph V. Higbee

Bald eagle: The bald eagle is no longer listed but is federally protected under the BGEPA and state protected under New Hampshire Statute. Under the NH Revised Statutes Annotated 209:9 and 209:10, no person shall hunt, capture, kill, take, possess, or disturb bald eagles or their nests. It is 3 feet tall with a 6-8 foot wingspan. Immature bald eagles are mottled light brown, tan, and white until age 3 or 4. Adult bald eagles have a distinctive white head and white tail feathers, and a dark brown body and wings. Bald eagles breed in forested areas near bodies of water and winter near open water (i.e., coastal areas, rivers, and lakes with open water). Bald eagles can live up to 30 years and can begin breeding between 4 to 6 years of age. They build large nests in tall trees near the water's edge. Bald eagles often retain the same mate for many years and reuse the same nest from year to year. Bald eagles primarily eat fish, but will also supplement their diet with a wide variety of small animals and with carrion (NHFGD 2013a)

Grasshopper sparrow
Photo by Aron Flanders - USFWS

Grasshopper sparrow: The grasshopper sparrow is state-listed as threatened by the state of New Hampshire. They have been observed in the mowed and un-mowed grassland areas on PSM. The grasshopper sparrow is a small sparrow species weighing around 0.5-0.7 oz. and from 4-5 in length with streaked black and chestnut brown feathers on their back. They are migratory, breeding throughout most of the United States and southern Canada and wintering in Mexico and western Central America. They are seasonally monogamous, forming pairs on breeding grounds from May-August for the northern populations. Grasshopper sparrows prefer open grasslands, characterized by pine savannas, palmetto-sawgrass prairies, lowbush blueberry, and bunchgrass prairies with bare ground for foraging. They are diurnal and feed primarily on insects and seeds. Common seeds consumed are sedges and panic grasses and common insects include grasshoppers and spiders (ADW 2019).

Peregrine falcon: The peregrine falcon is listed as threatened by the State of New Hampshire and is also designated as BCC species by the USFWS. The peregrine falcon has been documented on PSM. The falcon has a 3.5-foot wingspan with blue-gray back, barred white or buff colored underneath, and a black tear stripe on head. They are found in a variety of habitats, most with cliffs for nesting and open areas for foraging. They are also found in large cities where it nests on buildings. Peregrine falcons begin breeding as yearlings and pairs mate for life. Females lay 2-5 eggs in the spring and young hatch after about 30 days of incubation. Chicks are able to fly when they are 35-42 days old. Peregrines feed mostly on medium-sized birds, but may also prey on small mammals and reptiles. They are very fast flyers especially in pursuit of prey (NHFGD 2013b).

Peregrine falcon
Photo by Frank Doyle

Eastern meadowlark: The eastern meadowlark is listed as threatened by the State of New Hampshire and has been documented on PSM. The meadowlark is a medium-sized songbird with short tails and long, spear-shaped bills (Cornell Lab of Ornithology 2019). They are ground-nesting birds which are found in farm fields, pastures, grasslands, and wet fields. Nests are built in small depressions, which can be as small as a hoof print, and allow nests to be concealed in vegetation. They are found year-round from New England down to South America. Their breeding range includes New Hampshire as well as north into Canada. Primarily insectivorous, the eastern meadowlark eats crickets, grasshoppers, caterpillars, and grubs. In winter months they will eat seeds and wild fruits (Cornell Lab of Ornithology 2019).

Eastern meadowlark
Photo by Dominic Sherony

7.3 Water and Wetland Resource Protection

Watershed protection is important to natural resources management because it directly affects surface water quality and the value of aquatic habitats. Pease ANGB currently protects its watershed through compliance with a number of federal, state, local, and USAF environmental regulations that require the installation to have detailed spill control and response procedures and to implement stormwater pollution prevention practices. The objective of these regulations is to prevent pollutants (e.g., fuels, solvents, sediments) from entering the watershed, thus protecting surface waters. Specific watershed protection measures used by Pease ANGB include spill clean-up equipment and practices at industrial locations and implementing IPM Plan.

The ANG is responsible for identifying and locating jurisdictional waters of the United States (including wetlands) occurring on ANG installations and identifying where these resources have the potential to be impacted by military mission activities. Such impacts could include construction of roads, buildings, runways, taxiways, navigation aids, and other appurtenant structures or activities as simple as culvert crossings of small intermittent streams, rip-rap placement in stream channels to curb accelerated erosion, and incidental fill and grading of wet depressions.

7.3.1 Regulatory and Permitting

The USACE regulates the discharge of dredged or fill material into WOUS, including wetlands, under Section 404 of the CWA. Even an inadvertent encroachment into WOUS including wetlands 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. WOUS including wetlands 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 WOUS 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 US EPA 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 WOUS; and all practicable and appropriate steps have been taken to minimize potential adverse impacts to the aquatic ecosystem (40 CFR Part 230.10).

Section 401 of the CWA gives the State of New Hampshire the authority to regulate, through the state water quality certification program, proposed federally-permitted activities resulting in a discharge to water bodies, including wetlands. The state may issue certification, with or without conditions, or deny certification for activities that may result in a discharge to water bodies. In New Hampshire, the USACE shares jurisdictional authority with the state to regulate wetlands and WOUS.

For questions or future coordination regarding permitting and federal jurisdiction of WOUS and wetlands, contact the USACE New England District Regulatory/ Permitting office:

USACE New England District Regulatory/ Permitting Main Office
Concord Park
696 Virginia Road
Concord, MA 01742-2718
(978) 318-8338

The major discharge points on Pease ANGB are regulated under a PDA NPDES Permit (No. NH0090000) by the NHDES under the auspices of the US EPA (NHANG 2005). Stormwater on the installation discharges into Flagstone Brook, Hodgson Brook, and McIntyre Brook, which are classified as impaired waters (NHDES 2016).

The primary state law that authorizes the permitting program to protect wetlands in New Hampshire is Revised Statute Annotated 482-A, the *New Hampshire Fill and Dredge in Wetlands Act* (hereafter The Wetlands Act). The Wetlands Act is administered by NHDES and it applies to all wetlands, no matter how small the impact. The Wetlands Act and the rules it authorizes have evolved over time and provide for three key components of wetland protection: permitting, mitigation, and prime wetland designation.

For additional questions or future coordination regarding permitting and state jurisdiction of WOUS and wetlands, contact the NHDES Water Division, contact information provided below:

NHDES Water Division Office
29 Hazen Drive; PO Box 95
Concord, NH 03302-0095
(603) 271-3434

The CWA Section 303(d) requires states to report a prioritized list of waters not meeting water quality standards (impaired waters) and to establish total maximum daily loads to correct the impairments (NHDES 2016). As reported in the 2011 SWPPP, Flagstone Brook is impaired for mercury, aluminum, and iron; Hodgson Brook is impaired for mercury, chloride, manganese, benthic macroinvertebrates, benthic macroinvertebrates bioassessments, dissolved oxygen, dissolved oxygen saturation, E. coli, pH, and habitat assessment; and McIntyre Brook is impaired for mercury and manganese (Pease ITP 2011a). The source of the impairment for McIntyre Brook is identified as airports and landfills (NHDES 2016). Pease ANGB is currently included in the 2011 SWPPP for PSM (Pease ITP 2011a), see **Section 7.8.2**.

7.3.2 Vegetation Buffers

Vegetated buffers are also referred to as riparian management zones, riparian buffers, wetland buffers, lake buffers, buffer strips, filter strips, or streamside management areas. Buffers can take many forms and may vary in size and function depending on the upland land use and the type of water resource being protected. They can either be grassland or forest and may or may not be mowed and maintained occasionally. One of the primary purposes of a vegetated buffer 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. Vegetated buffers should be maintained along all perennial and intermittent streams, wetlands, lakes, or ponds where nearby management activities result in surface/soil disturbance, earth changes, and where erosion and sediment transport occurs during rain events. Maintaining the forest cover around small water resources is also important for preventing sedimentation and impacts to water quality.

7.4 Grounds Maintenance

As stated in AFI 32-7064, installations will establish grounds maintenance practices which protect and enhance desirable natural and man-made features while supporting and preserving the military mission. This section reviews current responsibilities and grounds maintenance recommendations at Pease ANGB.

Grounds maintenance personnel currently mow the grass in the maintained areas of the installation. All nuisance species management and urban tree maintenance is accomplished by ground maintenance or other base personnel on an as-needed basis in accordance with the Pease ANGB IPM Plan. Any other non-routine maintenance is contracted out.

General recommendations to promote environmentally beneficial landscaping include:

- Make maximum use of regionally native plant species and avoid introduction of invasive, non-native species in revegetation and landscaping activities except where it conflicts with BASH management.
- Transition installation landscaping to native plant species that require less maintenance in terms of energy, water, manpower, equipment, and chemicals.
- All ground maintenance activities will ensure compliance with environmental legislation, regulations, and guidelines.
- Implement interim soil stabilization measures, erosion control and sediment retention practices including establishing a uniform ground cover as quickly as possible following land use conversion, or disturbance. The soils on Pease ANGB are susceptible to water erosion if not protected with vegetation or other cover.

The implementation of these goals will satisfy Section 207 of EO 13148 which requests agencies strive to promote the sustainable management of Federal facility lands through the implementation of cost-effective, environmentally sound landscaping practices and programs to reduce adverse impacts to the natural environment.

7.5 Soil Conservation and Sediment Management

Two main types of soil erosion exist: wind erosion and water erosion. Several factors affect water erosion, which include 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. Any change in vegetation cover or land management that increases the risk of water erosion could impact water quality downstream of Pease ANGB.

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. Water quality also may be negatively impacted by disturbances causing increased sedimentation to wetlands and stream channels. Stormwater runoff from impervious surfaces has a high potential to carry pollutants into wetlands, surface waters, and groundwater. Impervious surfaces at Pease ANGB include roads, parking lots, taxiways, and buildings. The most cost effective way to minimize sediment loss is to maintain vegetative cover. Success in revegetating disturbed sites depends on the chemical and physical properties of the soil. Revegetation procedures should include soil analysis to determine proper nutrient application levels. Other factors to consider are soil moisture, weather patterns, and proper species selection for any re-seeding project.

Soil erosion is managed under the SWPPP and additional best management practices (BMPs) are generated and implemented as needed when new actions such as construction may impact erosion and sedimentation (Pease ITP 2011a, NHANG 2019a).

7.6 Outdoor Recreation, Public Access, and Public Outreach

People and their associated social uses or needs are an integral part of ecosystem management. The outdoor recreation program is based on providing quality experiences while sustaining ecosystem integrity. Activities that have a direct environmental effect, such as soil erosion from walking trails, will be monitored, and adaptive management (e.g., water bars on trails) will be incorporated to mitigate negative impacts. Special consideration will be given to protecting wetland areas from negative impacts due to outdoor recreation or ecosystem management activities.

Public facilities and recreational land is available to provide recreational opportunities for assigned installation personnel, members of the reserve components, active or retired military and civil service personnel, and their families.

To ensure installation security, access is normally restricted to personnel who have a need to be on the installation. The general public is permitted on the installation on an as-needed basis for specific events related to the public such as an air show. Specific requests for installation access are reviewed and considered for approval on an individual basis. With that exception, the environmental office is not currently conducting any public outreach.

7.7 Geographic Information Systems

Geographic Information Systems (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 GIS to watershed, wetlands, wildlife, and various other natural resource management applications. GIS needs and requirements will be addressed through the ANG GeoBase Program.

7.8 Other Plans

7.8.1 Integrated Pest Management Plan

Pease ANGB has an IPM Plan that outlines and describes policies, standards and requirements for the CE personnel to follow when performing all operations in connection with pest management on the installation. Pest management 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 the IPM Plan is to utilize non-chemical procedures to control pests, including invasive, exotic plant and animal species to the greatest extent possible. Typically, a combination of the following pest management techniques is required to resolve the problem on a sustained basis:

- Mechanical control, which alters environmental in which pests live, traps or remove 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 or fencing).
- Cultural control, which manipulates environmental conditions to suppress or eliminate pests (e.g. removal of food scraps or altering their environment).
- Biological control, which uses predators, parasites, or disease organisms to control pests.

- Chemical control, which relies on pesticides to kill pest 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 pest management techniques safely. The potential presence of several zoonotics (e.g., Lyme disease and encephalitis) on the installation, and the potential threat to human health and safety (e.g., transmission of disease) cannot be underestimated and so is a focus of IPM management

7.8.1.1 Invasive Plant Species

Invasive, non-native species, and noxious weeds have the capability to significantly impact native vegetation and the military mission. EO 13112 *Invasive Species* directs federal agencies to prevent the introduction, establishment, and spread of invasive species as well as to eradicate and control populations of invasive species that are established. In December 5, 2016, EO 13751, *Safeguarding the Nation from the Impacts of Invasive Species* amended, updated, and reaffirmed this policy. The Federal Noxious Weed Act of 1974 and the Plant Protection Act of June 2000 grant the secretary of agriculture the authority to designate plants as noxious weeds. Invasive plant species, as defined by the US Department of Agriculture (USDA) and the New Hampshire Department of Agriculture (NHDA), observed and documented on Pease ANGB are listed in **Table 6**.

Table 6. Invasive Plant Species Observed or Documented on Pease ANGB

Scientific Name	Common Name	Scientific Name	Common Name
Acer platanoides	Norway maple	*Phalaris arundinacea*	reed canary grass
Ampelopsis brevipedunculata	porcelain berry	*Phragmites australis*	common reed
Artemisia vulgaris	common mugwort	*Rhamnus cathartica*	common buckthorn
Berberis thunbergii	Japanese barberry	*Robinia pseudoacacia*	black locust
Berberis vulgaris	common barberry	*Rosa multiflora*	Rambler rose
Celastrus orbiculatus	Oriental bittersweet	*Verbascum thapsus*	common mullein
Elaeagnus umbellate	autumn olive	*Vicia cracca*	bird vetch
Lonicera morrowii	Morrow's honeysuckle		

Source: NGB 2018, 2017, NHANG 2019a, NHDA 2017

7.8.2 Stormwater Management

Pease ANGB maintains and implements a SWPPP developed for Pease ITP to address and reduce stormwater pollution from installation operations (Pease ITP 2011a; NHANG 2019a). The SWPPP was developed in accordance with the requirements of the US EPA NPDES Permit No. NH0090000 (Pease ITP 2011a). Pease ANGB is also in the process of developing its own SWPPP for Multi-Sector General Permit (MSGP) industrial discharges associated with airfield operations.

Surface water runoff on Pease ANGB is collected through a system of man-made channels and ditches and is directed to four outfalls which exit the installation and are monitored under the NPDES by the PDA (NHANG 2005). The four outfalls are:

- Hodgson Brook – which discharges to the North Mill pond and then to the Piscataqua River
- Flagstone Brook- which empties into Little Bay
- McIntyre Brook which discharges to McIntyre Brook which flows into the Great Bay
- Grafton Ditch which flows into Hodgson Brook and then to North Mill Pond.

Construction related activities can lead to increases in erosion and sedimentation during storm events which can degrade water quality. The use of BMPs to minimize loss of soil from construction sites site ameliorates any potential impacts that could occur (NHANG 2019a). These BMPs include silt fences, covering of soil stockpiles, secondary containment for temporary storage of hazardous liquids, and vegetative buffer areas near intermittent streams, as appropriate (NHANG 2019a). Hazardous materials are managed according to all applicable regulations and, therefore, should not affect water quality.

The *New Hampshire Stormwater Manual*, developed in 2008 by the NHDES is a resource for stormwater planning and design which reviews state and federal stormwater quality and erosion law, best management practices, and example stormwater management plans. The state rules which govern management of surface water quality and erosion protection can be found in the New Hampshire Code of Administrative Rules Environmental Water Quality Chapter (Env-Wq; NHDES 2008b).

7.8.3 Bird/Wildlife Aircraft Strike Hazard

BASH is defined as the threat of aircraft collision with birds during flight operations and is a safety concern at all airfields due to the frequency of aircraft operations and the possibility of encountering birds at virtually all altitudes. Most birds fly close to ground level; correspondingly, more than 95 percent of all reported bird strikes occur below 3,000 feet above ground level. At most military installations, about half of reported bird strikes occur in the immediate vicinity of the airfield and another 25 percent occur during low-altitude local training exercises.

The Pease ANGB BASH Plan outlines how animal and bird populations in the Airport Operations Area (AOA) will be controlled and covers procedures and techniques for preventing bird/wildlife aircraft strikes and reducing strike hazard (NHANG 2018). This will be accomplished by habitat modification, fence maintenance around the AOA, harassment activities, and permitted depredation. The USDA-WS is currently responsible for most wildlife control including depredation operations at Pease ANGB and PSM. The USDA-WS works as a sub-permittees under both state and federal depredation permits issued to Pease ANGB and PSM. Flight safety personnel may assist as needed on base property. Currently depredation permits are held for a range of species including wild turkey, deer, and geese. In addition to native species there are several non-native, invasive bird species in the vicinity of Pease ANGB including European starlings, house sparrows, pigeons, and mute swans which can pose significant BASH risk. INRMP activities should be continually assessed during implementation and should be modified as necessary if they result in the attraction of high BASH threat species.

Aircraft are exposed to bird and wildlife hazards by both migratory and resident birds. Pease ANGB coordinates with PSM Airport Management regarding BASH and will continue to consider the PSM WHMP in the Pease ANGB BASH program.

BASH management recommendations include:

- Continue BHWG meetings at minimum twice per year
- Continue coordination with civilian airport to implement wildlife hazard management on the airport to include maintaining airfield turf at recommended heights, (6-12 inches [FAA], and 7-14 inches [USAF])
- Provide support to civilian airport decision to not manage airfield for state-listed species
- Support maintenance of drainage ditches, remove vegetation to restore flow
- Discourage future planting of wildlife attractants such as fruit bearing trees in areas which would increase BASH risk
- Periodically inspect hangars and natural areas for roosting and nesting birds and disperse if needed to reduce BASH risk
- Install exclusion devices on light poles as necessary
- Develop an airfield vicinity map to highlight areas of known wildlife concentration
- Consider sending a member of the 157 ARW to attend Bird Strike Committee USA conference and participate in the military breakout session.

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 projects. Management goals and objectives for the Pease ANGB INRMP were developed through a thorough evaluation of the natural resources present on the installation 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, USAF regulations and policies, and in coordination with USFWS and NHFGD.

OBJECTIVE PM 1: Prepare budget to implement the natural resources management program.

PROJECT PM 1.1: Submit work needs and proposed projects to ANG NR Manager for budget and contracting.

OBJECTIVE PM 2: Pease ANGB environmental management office will promote discussion with Installation Command, personnel, and pertinent stakeholders to define, refine, and monitor the ecosystem management vision for the installation, and review the INRMP on a yearly basis.

PROJECT PM 2.1: Complete annual review of Pease ANGB INRMP with internal stakeholders/ installation personnel to incorporate all new findings and monitoring information and facilitate integration of the approved INRMP into the installation's Master Plan, and other operational plans.

PROJECT PM 2.2: Complete annual review of Pease ANGB INRMP with USFWS and NHFGD to receive input and seek concurrence on continued implementation of the INRMP.

PROJECT PM 2.3: Complete INRMP review for operation and effect at least every 5 years with INRMP Task Force including internal and external stakeholders. Initiate update or revision as appropriate.

PROJECT PM 2.4: Persons responsible for implementation of the INRMP will attend the CECOS DoD Natural Resources Compliance course

PROJECT PM 2.5: The EM or the State Environmental Officer will attend the Pease ANGB Quarterly BASH Working Group meetings.

OBJECTIVE PM 3: Maintain and improve Geographic Information System (GIS) data and access to that data by Pease ANGB personnel.

PROJECT PM 3.1: Obtain access to GIS data for installation natural resources personnel.

OBJECTIVE PM 4: Initiate and/or continue programs and projects that enhance the land and military mission and result in no net loss of land availability.

GOAL –Non-point Source Pollution Prevention (SPP): Manage industrial stormwater discharges while protecting downstream water bodies including those on the Great Bay National Wildlife Refuge.

OBJECTIVE SPP 1: Maintain existing stormwater plans, implement best management practices, and obtain all applicable permitting for Pease ANGB.

PROJECT SPP 1.1: Maintain existing stormwater management controls as defined in the Pease ITP SWPPP (Pease ITP 2011a) and manage runoff in order to reduce erosion.
PROJECT SPP 1.2: Prepare and implement an installation specific SWPPP including updated stormwater management controls.
PROJECT SPP 1.3: Obtain permit coverage through the National Pollutant Discharge Elimination System (NPDES) 2015 MSGP and ensure compliance with all permit conditions.
PROJECT SPP 1.4: Minimize nonpoint source pollution through implementation of BMPs following existing spill prevention and hazardous materials management protocols, and education.

GOAL – Wildlife Management (WM): Manage plant and animal wildlife populations while minimizing potential impacts to the military mission.

OBJECTIVE WM 1: Maintain a Pease ANGB flora and fauna inventory and establish a monitoring program as a component of long-term ecological management. Based on findings, develop management strategies as needed and incorporate all data and information into the INRMP.

PROJECT WM 1.1: Review previous 5 years of flora and fauna surveys to characterize and create a baseline for species present on Pease ANGB.
PROJECT WM 1.2: Using results of data review, develop a Pease ANGB Wildlife Monitoring and Management Plan.
PROJECT WM 1.3: Implement the Pease ANGB Wildlife Monitoring and Management Plan.
PROJECT WM 1.4: Develop a list of native plant species which are appropriate for use in landscaping on Pease ANGB.

OBJECTIVE WM 2: Support BASH Plan implementation in cooperation with USDA-WS.

GOAL – Management of Threatened and Endangered Species and Habitats (TE): Manage threatened and endangered listed species while supporting the military mission.

OBJECTIVE TE 1: Maintain a Pease ANGB listed species inventory and establish a monitoring program as a component of long-term ecological management. Based on findings, develop management strategies as needed and incorporate all data and information into the INRMP.

PROJECT TE 1.1: Review previous 5 years of flora and fauna surveys to characterize and create a baseline for listed species present on Pease ANGB.
PROJECT TE 1.2: Using results of data review, develop a Pease ANGB Special Status Species Monitoring and Management plan.
PROJECT TE 1.3: Implement the Pease ANGB Special Status Species Monitoring and Management Plan.
PROJECT TE 1.4: Conduct surveys for federal and state listed species or species proposed for federal listing as needed.
PROJECT TE 1.5: A bat survey will be conducted under the FY2019 INRMP Support Contract to better define presence and locations of bat species at Pease ANGB. The study and reporting on findings will be completed by the end of FY2022.
PROJECT TE 1.6: Monitor progress of bat survey work being done at the installation. Report status to agencies at annual meeting.

PROJECT TE 1.7: Review the final report on the bat survey to determine what additional actions are needed to address the presence of bats on the installation. Report status to agencies at annual meeting.

PROJECT TE 1.8: Annually review federal and state threatened and endangered species list to check for listed species with potential to occur at Pease ANGB.

GOAL – WOUS/ Wetland Protection (WP): Manage WOUS/ wetland resources so they remain resilient and with no net loss of acreage or functions and values.

OBJECTIVE WP 1: Educate installation personnel on WOUS/ wetland protection requirements and maintain compliance with all applicable laws, regulations, and policies.

PROJECT WP 1.1: Ensure jurisdictional WOUS/ wetland determination remains current. Seek re-verification of delineation from the USACE in 2022.

PROJECT WP 1.2: In conjunction with SWPPP creation, develop materials to educate installation personnel's understanding of WOUS/ wetland regulations and their locations on Pease ANGB.

PROJECT WP 1.3: Implement best management practices for sediment erosion control and prevention during construction activities.

GOAL – Integrated Pest Management Program (IPMP): Facilitate the continued implementation of IPM approaches for managing pest species while minimizing use of chemicals.

OBJECTIVE IPMP 1: Support and facilitate implementation of the current pest management program on the installation.

PROJECT IPMP 1.1: Ensure monthly reporting to ANG NR Program Manager.

PROJECT IPMP 1.2: Ensure the annual review of the IPM Plan is conducted.

PROJECT IPMP 1.3: Ensure an update of the IPM Plan is conducted every 5 years (FY 2024).

GOAL – Invasive/Pest Species Management (ISM):

OBJECTIVE ISM 1: Manage invasive species on Pease ANGB in accordance with all applicable laws, regulations, and policies:

PROJECT ISM 1.1: Review previous 5 years of flora and fauna surveys to characterize and create a baseline for invasive/ pest species present on Pease ANGB.

PROJECT ISM 1.2: Conduct a specific invasive plant survey of species previously observed on the installation including the European buckthorn (*Rhamnus cathartica*), Rambler rose (*Rosa multiflora*), Partridge-berry (*Mitchella repens*), Morrow's honeysuckle (*Lonicera morrowii*), Japanese barberry (*Berberis thunbergii*), and Norway maple (*Acer platanoides*). Survey should identify locations, density, and make recommendations on control, management, and future prevention.

PROJECT ISM 1.3: Based on survey results develop an Invasive Plant Species Management Plan.

PROJECT ISM 1.5: Manage groundhogs and other terrestrial pest/invasive species identified in previous surveys. Implement control efforts when needed. Coordinate efforts with USDA Wildlife Services.

9.0 ANNUAL WORK PLANS

The INRMP Annual Work Plans contain projects listed by fiscal year (FY). For each project, a specific FY for implementation is provided (as applicable), as well as the office of primary responsibility (OPR), funding source, and priority for implementation (**Tables 7-11**). 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 ANG 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.
- 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 will not contend the INRMP is not being implemented if the project is not accomplished within the 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 7. Work Plans FY 2020			
Project	**OPR**	**Funding Source**	**Priority Level**
Submit work needs and proposed projects to ANG NR Manager for budget and contracting.			High
Complete annual review of Pease ANGB INRMP with internal stakeholders/ installation personnel.			High
Complete annual review of Pease ANGB INRMP with USFWS and NHFGD to receive input and seek concurrence on continued implementation of INRMP.			High
Annually, EM will review federal and state threatened and endangered species list to check for listed species with potential to occur at Pease ANGB.			High
The EM or the State Environmental Officer will attend the Pease ANGB Quarterly BASH Working Group meetings.			High
Maintain existing stormwater management controls as defined in the Pease ITP SWPPP (Pease ITP 2011a) and manage runoff in order to reduce erosion.			High
Prepare and implement an installation specific SWPPP including updated stormwater management controls.			High
Obtain permit coverage through the NPDES 2015 MSGP and ensure compliance with all permit conditions.			High
Minimize nonpoint source pollution through implementation of BMPs following existing spill prevention and hazardous materials management protocols, and education.			High
Develop a list of native plant species which are appropriate for use in landscaping on Pease ANGB.			Low
Conduct surveys for federal and state listed species or species proposed for federal listing as needed.			High
In conjunction with SWPPP creation, develop materials to educate installation personnel's understanding of WOUS/ wetland regulations and their locations on Pease ANGB.			High
Implement best management practices for sediment erosion control and prevention during construction activities.			High
Ensure monthly IPM reporting to ANG NR Program Manager.			High
Ensure the annual review of the IPM Plan is conducted.			High
Manage groundhogs and other terrestrial pest/invasive species identified in previous surveys. Implement control efforts when needed. Coordinate efforts with USDA Wildlife Services.			Medium
Review previous 5 years of flora and fauna surveys to characterize and create a baseline for invasive/ pest species present on Pease ANGB.			Medium
Review previous 5 years of flora and fauna surveys to characterize and create a baseline for listed species present on Pease ANGB.			High
Review previous 5 years of flora and fauna surveys to characterize and create a baseline for all species present on Pease ANGB.			High
Obtain access to GIS data for installation natural resources personnel.			Medium
Persons responsible for implementation of the INRMP will attend the CECOS DoD Natural Resources Compliance course by end of CY2021.			High
A bat survey will be conducted under the FY2019 INRMP Support Contract to better define presence and locations of bat species at Pease ANGB. The study and reporting on findings will be completed by the end of FY2022.			High

Table 8. Work Plans FY 2021			
Project	**OPR**	**Funding Source**	**Priority Level**
Submit work needs and proposed projects to ANG NR Manager for budget and contracting.			High
Complete annual review of Pease ANGB INRMP with internal stakeholders/ installation personnel.			High
Complete annual review of Pease ANGB INRMP with USFWS and NHFGD to receive input and seek concurrence on continued implementation of INRMP.			High
Annually, EM will review federal and state threatened and endangered species list to check for listed species with potential to occur at Pease ANGB.			High
The EM or the State Environmental Officer will attend the Pease ANGB Quarterly BASH Working Group meetings.			High
Maintain existing stormwater management controls as defined in the Pease ITP SWPPP (Pease ITP 2011a) and manage runoff in order to reduce erosion.			High
Prepare and implement an installation specific SWPPP including updated stormwater management controls.			High
Obtain permit coverage through the NPDES 2015 MSGP and ensure compliance with all permit conditions.			High
Minimize nonpoint source pollution through implementation of BMPs following existing spill prevention and hazardous materials management protocols, and education.			High
Develop a list of native plant species which are appropriate for use in landscaping on Pease ANGB.			Low
Conduct surveys for federal and state listed species or species proposed for federal listing as needed.			High
In conjunction with SWPPP creation, develop materials to educate installation personnel's understanding of WOUS/ wetland regulations and their locations on Pease ANGB.			High
Implement best management practices for sediment erosion control and prevention during construction activities.			High
Ensure monthly IPM reporting to ANG NR Program Manager.			High
Ensure the annual review of the IPM Plan is conducted.			High
Manage groundhogs and other terrestrial pest/invasive species identified in previous surveys. Implement control efforts when needed. Coordinate efforts with USDA Wildlife Services.			Medium
Conduct a specific invasive plant survey of species previously observed on the installation. Survey should identify locations, density, and make recommendations on control, management, and future prevention.			Medium
Using results of data review, develop a Pease ANGB Special Status Species Monitoring and Management plan.			High
Using results of data review, develop a Pease ANGB Wildlife Monitoring and Management Plan.			High
Persons responsible for implementation of the INRMP will attend the CECOS DoD Natural Resources Compliance course by end of CY 2021.			High
Monitor progress of bat survey work being done at the installation. Report status to agencies at annual meeting.			High

Table 9. Work Plans FY 2022			
Project	**OPR**	**Funding Source**	**Priority Level**
Submit work needs and proposed projects to ANG NR Manager for budget and contracting.			High
Complete annual review of Pease ANGB INRMP with internal stakeholders/ installation personnel.			High
Complete annual review of Pease ANGB INRMP with USFWS and NHFGD to receive input and seek concurrence on continued implementation of INRMP.			High
Annually, EM will review federal and state threatened and endangered species list to check for listed species with potential to occur at Pease ANGB.			High
The EM or the State Environmental Officer will attend the Pease ANGB Quarterly BASH Working Group meetings.			High
Maintain existing stormwater management controls as defined in the Pease ITP SWPPP (Pease ITP 2011a) and manage runoff in order to reduce erosion.			High
Prepare and implement an installation specific SWPPP including updated stormwater management controls.			High
Obtain permit coverage through the NPDES 2015 MSGP and ensure compliance with all permit conditions.			High
Minimize nonpoint source pollution through implementation of BMPs following existing spill prevention and hazardous materials management protocols, and education.			High
Develop a list of native plant species which are appropriate for use in landscaping on Pease ANGB.			Low
Conduct surveys for federal and state listed species or species proposed for federal listing as needed.			High
In conjunction with SWPPP creation, develop materials to educate installation personnel's understanding of WOUS/ wetland regulations and their locations on Pease ANGB.			High
Implement best management practices for sediment erosion control and prevention during construction activities.			High
Ensure monthly IPM reporting to ANG NR Program Manager.			High
Ensure the annual review of the IPM Plan is conducted.			High
Manage groundhogs and other terrestrial pest/invasive species identified in previous surveys. Implement control efforts when needed. Coordinate efforts with USDA Wildlife Services.			Medium
Based on survey results develop an Invasive Plant Species Management Plan.			Medium
Ensure jurisdictional WOUS/ wetland determination remains current. Seek re-verification of delineation from the USACE in 2022.			High
Implement the Pease ANGB Special Status Species Monitoring and Management Plan.			High
Implement the Pease ANGB Wildlife Monitoring and Management Plan.			Medium
Review the final report on the bat survey to determine what additional actions are needed to address the presence of bats on the installation. Report status to agencies at annual meeting.			High

Table 10. Work Plans FY 2023			
Project	**OPR**	**Funding Source**	**Priority Level**
Submit work needs and proposed projects to ANG NR Manager for budget and contracting.			High
Complete annual review of Pease ANGB INRMP with internal stakeholders/ installation personnel.			High
Complete annual review of Pease ANGB INRMP with USFWS and NHFGD to receive input and seek concurrence on continued implementation of INRMP.			High
Annually, EM will review federal and state threatened and endangered species list to check for listed species with potential to occur at Pease ANGB.			High
The EM or the State Environmental Officer will attend the Pease ANGB Quarterly BASH Working Group meetings.			High
Maintain existing stormwater management controls as defined in the Pease ITP SWPPP (Pease ITP 2011a) and manage runoff in order to reduce erosion.			High
Prepare and implement an installation specific SWPPP including updated stormwater management controls.			High
Obtain permit coverage through the NPDES 2015 MSGP and ensure compliance with all permit conditions.			High
Minimize nonpoint source pollution through implementation of BMPs following existing spill prevention and hazardous materials management protocols, and education.			High
Develop a list of native plant species which are appropriate for use in landscaping on Pease ANGB.			Low
Conduct surveys for federal and state listed species or species proposed for federal listing as needed.			High
In conjunction with SWPPP creation, develop materials to educate installation personnel's understanding of WOUS/ wetland regulations and their locations on Pease ANGB.			High
Implement best management practices for sediment erosion control and prevention during construction activities.			High
Ensure monthly IPM reporting to ANG NR Program Manager.			High
Ensure the annual review of the IPM Plan is conducted.			High
Manage groundhogs and other terrestrial pest/invasive species identified in previous surveys. Implement control efforts when needed. Coordinate efforts with USDA Wildlife Services.			Medium
Implement the Pease ANGB Special Status Species Monitoring and Management Plan.			High
Implement the Pease ANGB Wildlife Monitoring and Management Plan.			Medium

Table 11. Work Plans FY 2024			
Project	**OPR**	**Funding Source**	**Priority Level**
Submit work needs and proposed projects to ANG NR Manager for budget and contracting.			High
Complete INRMP review for operation and effect at least every 5 years with INRMP Task Force. Conduct update or revision as appropriate.			High
Complete annual review of Pease ANGB INRMP with USFWS and NHFGD to receive input and seek concurrence on continued implementation of INRMP.			High
Annually, EM will review federal and state threatened and endangered species list to check for listed species with potential to occur at Pease ANGB.			High
The EM or the State Environmental Officer will attend the Pease ANGB Quarterly BASH Working Group meetings.			High
Maintain existing stormwater management controls as defined in the Pease ITP SWPPP (Pease ITP 2011a) and manage runoff in order to reduce erosion.			High
Prepare and implement an installation specific SWPPP including updated stormwater management controls.			High
Obtain permit coverage through the NPDES 2015 MSGP and ensure compliance with all permit conditions.			High
Minimize nonpoint source pollution through implementation of BMPs following existing spill prevention and hazardous materials management protocols, and education.			High
Develop a list of native plant species which are appropriate for use in landscaping on Pease ANGB.			Low
Conduct surveys for federal and state listed species or species proposed for federal listing as needed.			High
In conjunction with SWPPP creation, develop materials to educate installation personnel's understanding of WOUS/ wetland regulations and their locations on Pease ANGB.			High
Implement best management practices for sediment erosion control and prevention during construction activities.			High
Ensure monthly IPM reporting to ANG NR Program Manager.			High
Ensure the annual review of the IPM Plan is conducted.			High
Manage groundhogs and other terrestrial pest/invasive species identified in previous surveys. Implement control efforts when needed. Coordinate efforts with USDA Wildlife Services.			Medium
Implement the Pease ANGB Special Status Species Monitoring and Management Plan.			High
Implement the Pease ANGB Wildlife Monitoring and Management Plan.			Medium
Ensure an update of the IPM Plan is conducted every 5 years.			High

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 as defined by Chapter 4 of AFI 32-7001 (Environmental Quality Programming and Budgeting).
- Executes all "must fund" projects 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, NHFGD, and NOAA, where applicable.
- Ensures the INRMP implements ecosystem management on ANG 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 Pease ANGB 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 INRMP Working Group continue to participate in the implementation of this INRMP. The INRMP Working Group is made up of the key Pease ANGB 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 INRMP Working Group with the leadership and structure necessary for the successful implementation of this INRMP.

10.1.1 Monitoring INRMP Implementation

10.1.1.1 Pease ANGB INRMP Implementation Analysis

The Pease ANGB 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 Pease ANGB 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 NHFGD, and others.

Some of these areas may not be looked at every year due to lack of data or pertinent information. The effectiveness of this INRMP as a mission enabling conservation tool will be decided by mutual agreement of the USFWS, the NHFGD, and Pease ANGB 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 (DUSD) 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 needed because an installation is currently or will be out of compliance if projects 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 and cultural resources (historical and archaeological sites).
- 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.
- Initial documenting and cataloging of archaeological materials.

Maintenance requirements include those projects needed that are not currently out of compliance but shall be out of compliance if projects 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 educate the public on 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 and Historic Preservation Week activities.
- 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 cultural or 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 or 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:

- The Legacy Resource Management Program provides financial assistance to DoD efforts to conserve natural and cultural resources on federal lands. Legacy projects could include regional ecosystem management initiatives, habitat preservation efforts, archeological investigations, invasive species control, and/or flora or fauna surveys. Project proposals

are submitted to the Legacy program during their annual funding cycle (https://www.dodlegacy.org/Legacy/index.aspx).

- There are also grant and assistance programs administered by other federal agencies that could be accessed for natural resources management at Pease ANGB. 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).
- Pease ANGB 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, Memorandums of Agreement (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 Pease ANGB include:

- MOU between DoD and USFWS/International Fund for Animal Welfare to promote the conservation of migratory birds (2011).
- 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 the DoD and US EPA to form a working partnership to promote environmental stewardship by adopting IPM 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).
- MOA between FAA, USAF, US Army, US EPA, USFWS, and USDA to address aircraft-wildlife strikes (2003).
- Cooperative Agreement between DoD and The Nature Conservancy to work cooperatively in areas of mutual interest (2010).
- Cooperative Agreement between NHANG and USDA-WS (2013).

- 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.

For a further list of cooperative agreements and MOUs please visit:
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

The Pease ANGB has multiple natural resources consultation requirements in addition to the INRMP development and review requirements as identified in the Sikes Act. Any action which may impact federally-listed species of any management of listed species requires ESA Section 7 consultation with the USFWS. State-listed species management, as well as game species management, requires consultation with NHFGD. Actions that fall under the jurisdiction of Section 401 of the CWA necessitate permitting from NHFGD, while Section 404 actions necessitate permitting from the USACE, US EPA, and the NHDES.

10.2 Annual INRMP Review and Coordination Requirements

Per DoD policy, Pease ANGB will review the INRMP annually in cooperation with the USFWS and NHFGD. On an annual basis, the EM will invite the USFWS Regional Office, the USFWS New England Field Office, the NHFGD, 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 New England Field Office and a representative of NHFGD 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, Pease ANGB 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 Pease ANGB 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, Pease ANGB will specifically:

- Invite feedback from USFWS and NHFGD on the effectiveness of the INRMP.

- Inform USFWS and NHFGD which INRMP projects 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 Pease ANGB. The review will be conducted by the 3 cooperating parties to include the Commander responsible for the INRMP, the Supervisor of the USFWS New England Field Office, and the Executive Director of the NHFGD. 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 New England Field Office and NHFGD. Once concurrence letters or signatures are received from the Supervisor of the USFWS New England Field Office and the NHFGD Executive Director., 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 NHFGD concurrence on the revised INRMP is received. Pease ANGB 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 Pease ANGB’s military mission, USFWS, and NHFGD 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 US EPA 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 INRMP 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 – CEQ Regulations on Implementing NEPA Procedures
40 CFR 6 – US EPA Regulations on Implementation of NEPA Procedures
40 CFR 162 – US EPA 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

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 determines that 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 MOU with the USFWS by January 2003 that shall promote the conservation of migratory bird populations.

DoDI, 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 DUSD (Environment, Safety and Occupational Health), 20 Sept 11, Subject: *Interim Policy on Management of White Nose Syndrome in Bats.*

Memorandum, Assistant DUSD (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 DUSD (Environment, Safety and Occupational Health), 14 Aug 06, Subject: *Integrated Natural Resource Management Plan (INRMP) Template*

Memorandum, Assistant DUSD (Environment, Safety and Occupational Health), 17 May 05, Subject: *Implementation of Sikes Act Improvement Amendments: Supplemental Guidance concerning Leased Lands*

Memorandum, Assistant DUSD (Environment, Safety and Occupational Health), 1 Nov 04, Subject: *Implementation of Sikes Act Improvement Amendments: Supplemental Guidance concerning INRMP Reviews*

Memorandum, DUSD (Installations and Environment), 10 Oct 02, Subject: *Implementation of Sikes Act Improvement Act: Updated Guidance*

Memorandum, Assistant DUSD (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.*