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

December 2018

Prepared for:

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Cooperative Agreement:
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SIGNATURE PAGE

The Maine Air National Guard (MEANG) Integrated Natural Resources Management Plan (INRMP) has been prepared for the 101 Air Refueling Wing (101 ARW) at Bangor Air National Guard Base (hereafter Bangor ANGB) and its Geographically Separate Unit (GSU), the South Portland Air National Guard Station (hereafter SPANGS), to manage significant natural resources in support of the training mission. Significant natural resources include the presence of federal and state-listed protected species, and Waters of the US including wetlands. The MEANG INRMP meets the intent of the Sikes Act (16 USC § 670a–670l, 74 Stat. 1052).

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

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

Approving Officials:

Frank W. Roy, Colonel Maine Air National Guard, Wing Commander	Date
Anna Harris US Fish and Wildlife Service Project Leader, Maine Field Office	Date
Chandler E. Woodcock Maine Department of Inland Fisheries and Wildlife Commissioner	Date

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Approving Officials:

ROY.FRANK.W.1006527643 Digitally signed by ROY.FRANK.W.1006527643 Date: 2018.12.20 07:03:58 -05'00'

Frank W. Roy, Colonel — Date
Maine Air National Guard, Wing Commander

Anna Harris — 12/04/18 Date
US Fish and Wildlife Service
Project Leader, Maine Field Office

Judith Camuso — 1/24/19 Date
Maine Department of Inland Fisheries and Wildlife
Acting Commissioner

ANNUAL REVIEW DOCUMENTS

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

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

Year: 2019

[ ] MEANG Commander	Date
[ ] US Fish and Wildlife Service	Date
[ ] Maine Department of Inland Fisheries and Wildlife	Date

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Year: 2020

[ ] MEANG Commander	Date
[ ] US Fish and Wildlife Service	Date
[ ] Maine Department of Inland Fisheries and Wildlife	Date

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Year: 2021

[ ] MEANG Commander	Date
[ ] US Fish and Wildlife Service	Date
[ ] Maine Department of Inland Fisheries and Wildlife	Date

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Year: 2022

[ ] MEANG Commander	Date
[ ] US Fish and Wildlife Service	Date
[ ] Maine Department of Inland Fisheries and Wildlife	Date

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ACRONYMS

°F	degrees Fahrenheit
101 ARW	101 Air Refueling Wing
AFB	Air Force Base
AFI	Air Force Instruction
ANG	Air National Guard
ANGB	Air National Guard Base
BA	Biological Assessment
BASH	Bird/Wildlife Aircraft Strike Hazard
BASWG	Bangor Area Storm Water Group
BCI	Bat Conservation International
BGEPA	Bald and Golden Eagle Protection Act
BGR	Bangor International Airport
BHWG	Bird/Wildlife Hazard Working Group
BMP	Best Management Practice
CE	Civil Engineer
CECOS	Civil Engineer Corps Officers School
CEQ	Council on Environmental Quality
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
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EM	Environmental Manager
EO	Executive Order
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FY	Fiscal Year
GIS	Geographic Information System
GSU	Geographically Separate Unit
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
INRMP	Integrated Natural Resources Management Plan
IPANE	Invasive Plant Atlas of New England
IPM	Integrated Pest Management
LID	Low Impact Development
MBTA	Migratory Bird Treaty Act
MCP	Maine Coastal Program
MDA	Maine Department of Agriculture
MDEP	Maine Department of Environmental Protection
MDIFW	Maine Department of Inland Fisheries and Wildlife
MDOC	Maine Department of Conservation
MEANG	Maine Air National Guard

MESA	Maine Endangered Species Act
MFS	Maine Forest Service
MNAP	Maine Natural Areas Program
MOA	Memorandums of Agreement
MOU	Memorandums of Understanding
MRSA	Maine Revised Statutes Annotated
MS4	Municipal Separate Storm Sewer System
msl	mean sea level
MSZA	Mandatory Shoreland Zoning Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NGB	National Guard Bureau
NOAA	National Oceanic and Atmospheric Administration
NOAA NMFS	National Oceanic and Atmospheric Administration National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRPA	Natural Resources Protection Act
NVCS	National Vegetation Classification System
NWP	Nation Wide Permit
NWS	National Weather Service
OPR	Office of Primary Responsibility
PCB	Polychlorinated Biphenyls
SVP	Significant Vernal Pools
SWAP	State Wildlife Action Plan
SWH	Significant Wildlife Habitat
SWPPP	Storm Water Pollution Prevention Plan
US	United States
USACE	US Army Corps of Engineers
USAF	US Air Force
USC	US Code
USDA	US Department of Agriculture
USDA-WS	US Department of Agriculture – Wildlife Services
USEPA	US Environmental Protection Agency
USFS	US Department of Agriculture Forest Service
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
WHMP	Wildlife Hazard Management Plan
WNS	White-Nose Syndrome
WMP	Watershed Management Plan
WQC	Water Quality Certification

1.0 EXECUTIVE SUMMARY

The Sikes Act of 1997, 16 US Code (USC) § 670a *et seq*., as amended, (hereafter 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 the Department of Defense (DoD) and US Air Force (USAF) Instructions and Manuals. The conservation measures discussed in the INRMP help manage water resources, reduce bird/wildlife aircraft strike hazard (BASH) risk, manage federal and state-listed species, and sustain natural resources. The MEANG INRMP is intended to be in support of and consistent with the intent of the Sikes Act.

The MEANG INRMP is the primary guidance document and tool for managing natural resources on Bangor ANGB and SPANGS. Bangor ANGB occupies approximately 281 acres and is partially owned by the USAF and partially leased from the City of Bangor in Penobscot County, Maine. SPANGS occupies approximately 12 acres in Cumberland County, Maine. All facilities are under the command of the MEANG with the primary purpose of deploying and employing air refueling, airlift, aerospace expeditionary forces, and expeditionary combat support forces to ongoing military operations world-wide and providing assistance to the State of Maine for use during local and state-wide disasters or emergencies. Bangor ANGB, due to its geographic location and the nature of the facility, contains limited, but important habitat and species that requires active natural resource management. Natural resources management activities on Bangor 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 MEANG INRMP provides a structure and plan to manage natural resources effectively and ensures that facilities remain available to support the Installation's military mission into the future.

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

2.0 GENERAL INFORMATION

2.1 Purpose and Scope

The MEANG INRMP is the primary guidance document and tool for natural resource management at Bangor ANGB and SPANGS that provides for sustainable, healthy ecosystems, complies with applicable environmental laws, regulations, and real estate leases and licenses, and provides for "no net loss" in the capability of installation lands to support the military mission of

MEANG. The Installation Commander can use the MEANG INRMP to manage natural resources more effectively and to ensure installation lands remain available and, in a condition, capable of supporting the Installation's military mission over the long term.

The MEANG INRMP is consistent with the Sikes Act as required by the DoD, the USAF, and the National Guard Bureau (NGB). It was developed as a result of the presence of federal and state-listed endangered and threatened species, and regulated water resources on Bangor ANGB and SPANGS. 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 Bangor ANGB and SPANGS 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 Bangor ANGB and SPANGS 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 MEANG INRMP have been developed to enhance and maintain biological diversity within Bangor ANGB and SPANGS 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 adjacent land owners as well as other federal, state, and local cooperating agencies 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-related issues 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, where practical and consistent with the military mission
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, when feasible, with adjoining property owners, other DoD components, as well as other federal, state, and local agencies
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

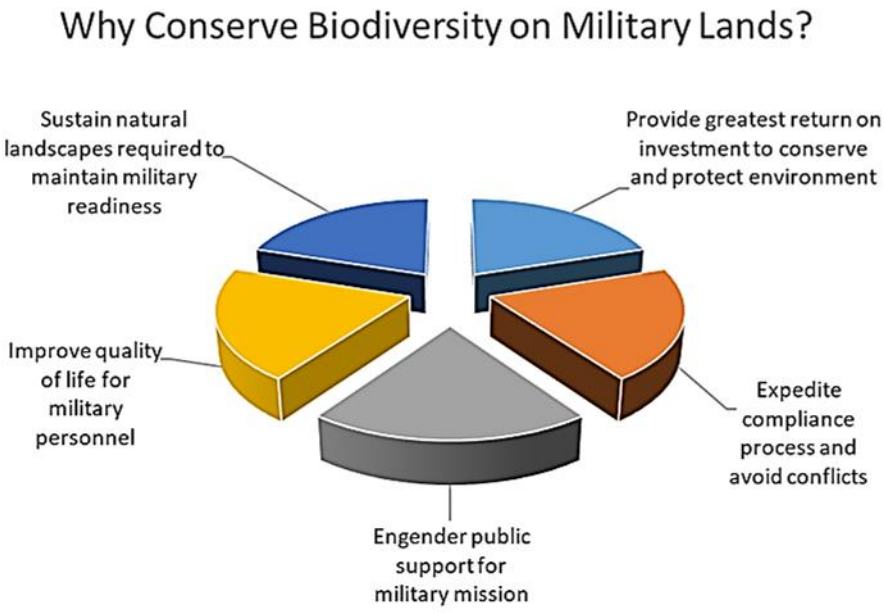

Figure 1. Why conserve biodiversity on Military Lands
**Adapted from Keystone Center, 1996.*

2.3 Authority

2.3.1 Natural Resources Law, Regulations & Policy

The ANG, USFWS and MDIFW determined an INRMP was required for Bangor ANGB and its GSU, SPANGS, due to the presence of significant natural resources thereby necessitating conservation and management.

DoDI 4715.03, *Natural Resources Conservation Program*, identifies the DoD policies and procedures concerning natural resources management and INRMP reviews, public comment, and endangered species consultation. INRMPs are required to be jointly reviewed by the USFWS, state fish and wildlife agency (MDIFW), and ANG installation for operation and effect on a regular basis, but not less often than every 5 years. Minor updates and continued implementation of an existing INRMP do not require need for public comment. Major revisions to an INRMP do require an opportunity for public review. The degree of endangered species consultation when updating or revising an INRMP depends upon specific projects identified in the INRMP and the amount of past consultation. Most updates and revisions will not require formal consultation. 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 the NEPA 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 for an INRMP typically undergo their own separate 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, MEANG 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 32-7060, IICEP. Furthermore, public participation in decision making on new proposals is also 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 MEANG's first INRMP (September 2013) was conducted in accordance with NEPA, CEQ *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 Code of Federal Regulations [CFR] § 1500-1508), and 32 CFR Part 989. The EIAP and decision-making process for the Proposed Action (implementation of the 2013 MEANG INRMP) involved an examination of all environmental issues pertinent to the action proposed. Impact evaluations of the 2013 MEANG 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 MEANG and other relevant local, state, and federal agencies. The EIAP for the implementation of the 2013 MEANG INRMP does not include an analysis of effects for individual actions or projects. Individual actions or projects that have the potential to impact the environment will be analyzed separately in accordance with the NEPA process. A new EIAP is not required for this INRMP update.

If a future action or project has the potential to impact the environment, the initial step in compliance with NEPA is to complete USAF Form 813 "Request for Environmental Impact Analysis". The form is prepared to aid in the development of the assessment, providing information on the proposed action and its alternatives, purpose, and potential environmental effects. This allows the proponent to identify potential environmental impacts early and facilitates making a determination about whether an EA or an Environmental Impact Statement (EIS) might be required for a specific action. Some sections are prepared by the proponent and other sections are prepared by the Environmental Management Office 101 CES/CEV. If the action is not covered by a categorical exclusion, then an EA is prepared to determine if there are potential significant impacts. If potential significant impacts are identified, either while completing USAF Form 813 or during the EA, then an EIS is prepared. The majority of natural resources management actions in this INRMP are covered by categorical exclusions.

2.3.3 Responsibilities

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

2.3.3.1 Installation Commander

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

2.3.3.2 ANG NGB/A4AM Natural Resources Program Manager

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

2.3.3.3 Environmental Management Office

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

2.3.3.4 Environmental Manager

The EM is responsible for ensuring activities associated with the implementation of the MEANG INRMP adheres to applicable federal, state, local, and USAF environmental regulations and policies. Projects proposed in the MEANG INRMP are reviewed by the EM and the ANG NR Program Manager.

2.3.3.5 Base Civil Engineer

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

2.3.3.6 Legal Office

The Legal Office is responsible for ensuring the implementation of the management objectives contained within the MEANG 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 101 ARW/CC and 101 CES/CEV 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.

2.3.3.7 Flight Safety Office

Bangor ANGB's Flight Safety Office is responsible for development, implementation, and management of the ANG BASH Program. The Safety Office also ensures that bird/wildlife strikes resulting from aircraft assigned to transient units at Bangor ANGB are accurately documented

and reported to the EM and the USAF BASH Team. In addition, the Safety Office participates in Bangor ANGB's Bird/Wildlife Hazard Working Group (BHWG), which conducts meetings to evaluate and refine strategies for the reduction of BASH risk on Bangor ANGB. The Safety Office is responsible for coordinating with and providing required information on BASH activities with the EM.

2.3.3.8 Wing Safety Office

The Wing Safety Office, in conjunction with the EM, is responsible for implementing all activities presented in this IRNMP that pertain to the BASH Reduction Program. The Wing Safety Office also ensures that bird/wildlife strikes that occur with aircraft assigned to units at Bangor ANGB are accurately documented and reported to the USAF BASH Team. In addition, the Wing Safety Office ensures that the BHWG conducts meetings on the reduction of the BASH threat on the installation.

2.3.3.9 Airfield Management

Airfield Management is responsible for ensuring that the airfield is acceptable and appropriated for flight activity.

2.3.3.10 Operation and Management

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

2.3.3.11 US Department of Agriculture – Wildlife Services

US Department of Agriculture – Wildlife Services (USDA-WS) is responsible for monitoring nuisance wildlife that have the potential to create an aircraft strike hazard. USDA-WS personnel support activities that pertain to the BASH Program and are responsible for wildlife depredation requirements within the airfield.

2.3.3.12 Pest Management

The Installation Pest Management Coordinator is responsible for the protection of real estate, control of potential disease vectors or animals of other medical importance, control of undesirable or nuisance plants and animals (including insects), and prevention of damage to natural resources. Pest management personnel utilize Integrated Pest Management (IPM) approaches and are responsible for the implementation of the IPM Plan. Pest Management is responsible for coordinating with USDA-WS and for all the depredation activities. Pest Management also coordinates with USDA-WS regarding required permitting and for permit clarification when required, while keeping the INRMP Working Group appraised of proposed modifications or changes to permits, as they occur or are proposed.

2.3.3.13 US Fish and Wildlife Service

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

2.3.3.14 Maine Department of Inland Fisheries and Wildlife

The MDIFW is the State Fish and Wildlife Agency and is a signatory of the MEANG INRMP, providing input regarding natural resource projects and operational component plans. The MDIFW alerts the EM and/or the ANG NR Program Manager whenever new species added to the state threatened and endangered species lists have the potential for inhabiting Bangor ANGB or SPANGS. In addition, the MDIFW, when feasible, will support MEANG wildlife and vegetation surveys conducted at MEANG properties.

2.3.3.15 Public Affairs Office

The Public Affairs Office is responsible for the coordination of public access for events at Bangor ANGB or SPANGS. The Public Affairs Office serves as the point-of-contact to interface between the Installation Commander and civilian groups interested in MEANG Installations for environmental, educational, or other purposes.

2.4 Integration with Other Plans

By its nature, an INRMP is multidisciplinary and provides a summary of natural resources and associated management at a specific Installation. As a result, information from an INRMP is incorporated into other plans and other plans are written to support an INRMP. The MEANG plans include the following:

- BASH Hazard Reduction Plan. Provides summary of the BASH program on Bangor ANGB, including techniques, processes, responsibilities, and management recommendations (MEANG 2017a).
- IPM Plan. Provides summary of management of pest species to minimize impact to mission, natural resources, and the environment (MEANG 2015).
- Storm Water Pollution Prevention Plan (SWPPP). Provides overview of prevention and management of stormwater (MEANG 2017b).

In addition, the MEANG INRMP also integrates and coordinates its activities with the following plans from other agencies.

- Wildlife Hazard Management Plan (WHMP) for Bangor International Airport (BGR) which provides a summary of the wildlife hazard management program (similar to BASH) on the adjacent airport (BGR 2015).
- Birch Stream Watershed Management Plan (WMP) provides a summary of stressors, mitigation, and management recommendations for Birch Stream (City of Bangor 2010).
- Maine's State Wildlife Action Plan (SWAP) which provides a summary of the state of wildlife in Maine, identifies species of greatest conservation need, and provides goals, objectives, and management recommendations (MDIFW 2015).

3.0 INSTALLATION OVERVIEW

3.1 Location and Area

The MEANG manages Bangor ANGB, which is located within the City of Bangor in Penobscot County, Maine, approximately 3 miles northwest of the Penobscot River and 1.5 miles northwest of I-95 (**Figures 2-3**). The facility is located adjacent to BGR who is a joint user of the runways. Bangor ANGB comprises approximately 281 acres with the USAF owning 122 acres and the remaining 159 acres leased from the City of Bangor. The MEANG also operates and maintains 11.77-acre SPANGS in South Portland, Cumberland County, Maine. This property includes 8 buildings and is located approximately 0.7 miles south of the Portland International Jetport (ANG 2009; **Figures 4-7**).

Figure 2. Bangor ANGB Regional Map

Figure 3. SPANGS Regional Map

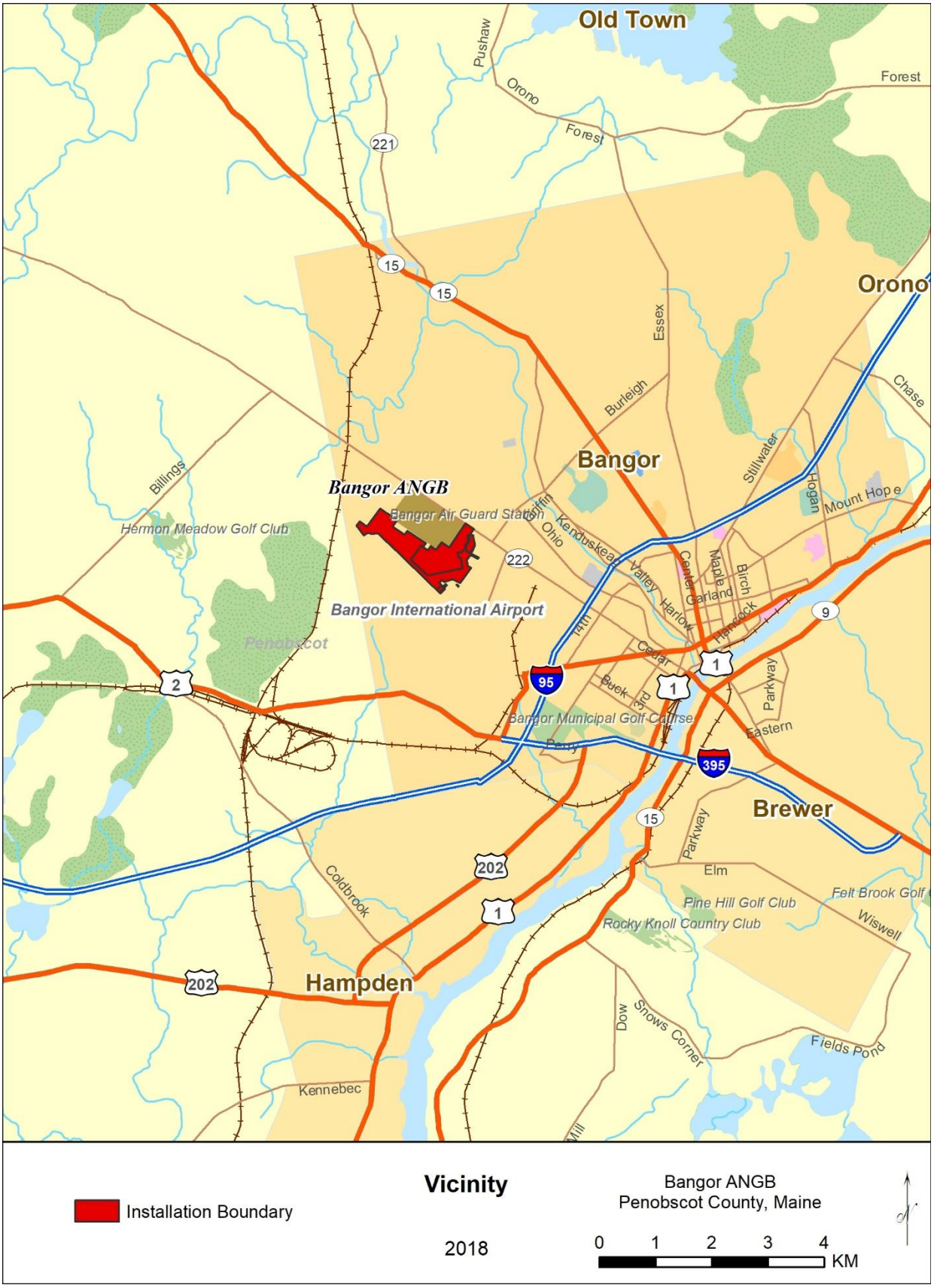

Figure 4. Bangor ANGB Vicinity Map

Figure 5. SPANGS Vicinity Map

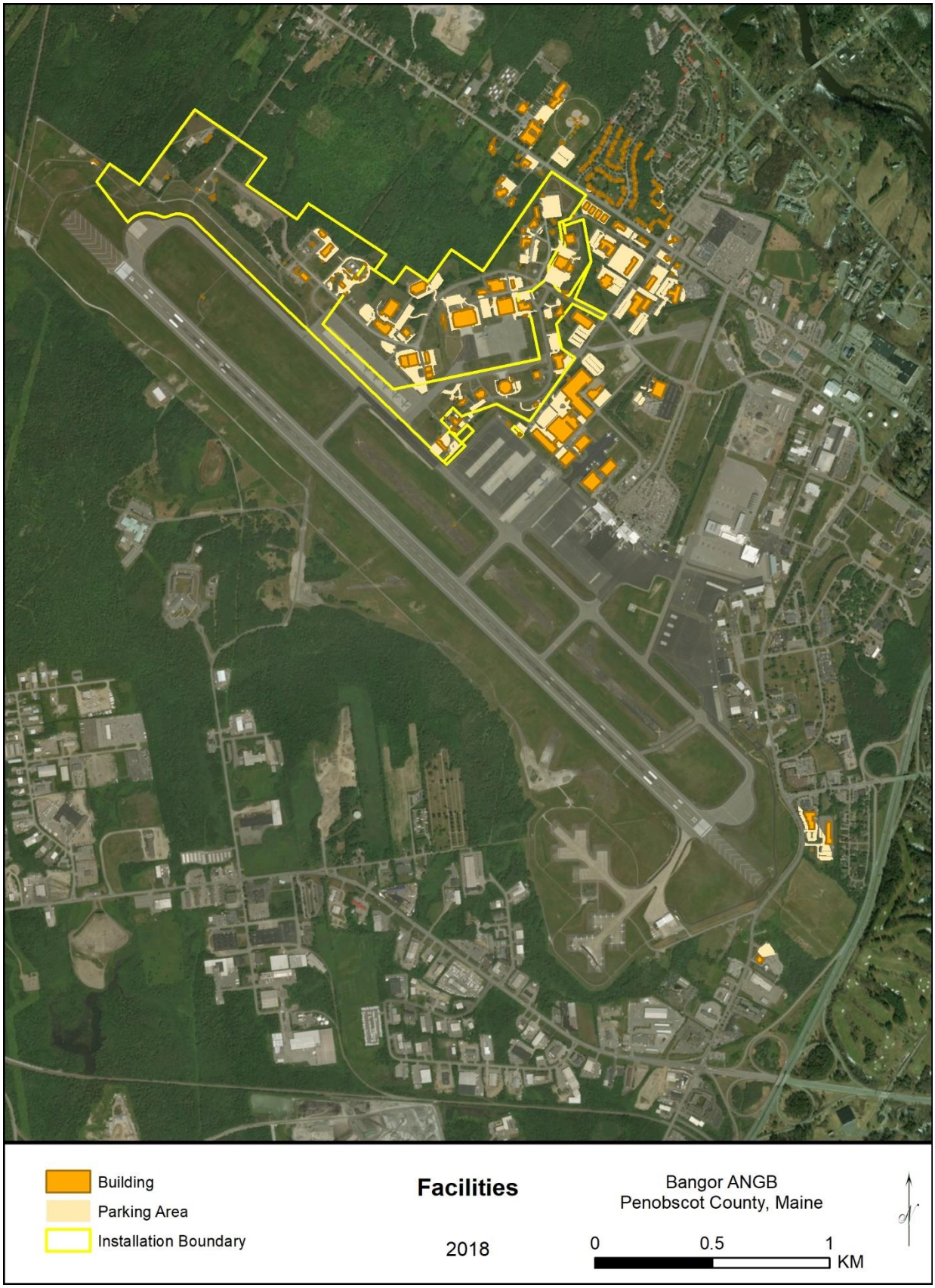

Figure 6. Bangor ANGB Facilities Map

Figure 7. SPANGS Facilities Map

3.2 Installation History

In 1940, the City of Bangor began work to transform the small civilian airfield into an airport with both military and commercial components. Following the US entry into WWII, the airfield became Dow Air Force Base (AFB) in 1942. The base was closed briefly after WWII but was reopened during the Korean conflict. The ANG first came to Maine in 1947 when the 101 Fighter Group was federally recognized and stationed at Camp Keyes in Augusta, Maine. That same year, additional units of the 101 Fighter Group were organized and stationed at Dow AFB. The base closed in 1968, but 2 years later the 101 ARW was established at the Bangor City Airport, which would later become Bangor ANGB (ANG 2005). Today, the Bangor ANGB is home to the 101 ARW and occupies approximately 281 acres in the northeastern corner of the BGR (**Figure 6**).

SPANGS was established in 1964. In June 1964, the 243 Ground Electronics Engineering Installation Agency Squadron and the 265 Communications Squadron relocated to the recently completed SPANGS (ANG 2008; **Figure 7**).

3.3 Military Missions

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

The current mission of Bangor ANGB is to deploy and employ air refueling, airlift, aerospace expeditionary forces, and expeditionary combat support forces to ongoing military operations worldwide. The 101 ARW provides air refueling to US Strategic Command to support Global Strike Operational Plan taskings. The MEANG also provides logistical and support services to the community and State of Maine in the event of natural disasters or as directed by the Governor.

At SPANGS, the 265 Combat Communications Squadron trains members in the use of existing and future communication technologies and deploy combat-ready teams to meet contingency tasking during wartime. The 243 Engineering Installation Squadron trains members to establish communications systems including Installation and engineering of new communications systems for a specific mission's requirements, as well as to remove and relocate old or outdated systems.

3.4 Surrounding Communities

Penobscot County is generally dominated by low density development including residential and natural resource-related uses. The population of Penobscot County in 2011 was estimated at 151,957, representing a population decrease of 1.3% since 2010 (US Census Bureau 2018).

3.5 Local and Regional Natural Areas

Bangor ANGB is located in close proximity to a number of parks and preserves, including Brown Woods, Prentiss Woods, Bangor City Forest, Northeast Penjajawoc Preserve, and Walden-Parke Preserve. SPANGS is also located in close proximity to a number of natural areas including Deering Oaks Park, Fort Allen Park, and Willard Beach.

4.0 PHYSICAL ENVIRONMENT

4.1 Climate

The climate of Bangor ANGB, Penobscot County, is generally warm in the summer and below freezing in the winter. Between 1980 and 2017, the warmest month was July with an average maximum temperature of 79.8 degrees Fahrenheit (°F). During this same period, the month of January was the coldest with an average minimum temperature of 8.4°F. Average annual rainfall is approximately 41 inches with average monthly rainfall fairly consistent throughout the year. Average annual snowfall is approximately 72 inches with the vast majority of snowfall occurring between November and April (National Weather Service [NWS] 2018).

The climate of SPANGS, Cumberland County, is generally a cool, maritime climate moderated by weather systems tracking across the Atlantic Ocean. Average daily maximum temperatures is 30.7°F in January and 81.6°F in July. Average annual precipitation is 43 inches, and average annual snowfall is 72 inches (ANG 2009).

In consideration of future climate resiliency scenarios at Bangor ANGB and SPANGS, climate is predicted to grow considerably warmer and wetter during this century. These warming trends imply a significant shift in the regional hydrology, from a snowmelt-dominated regime to one that exhibits significant runoff during winter (The Nature Conservancy 2012). This will be accompanied by a continued shift in the timing of hydrological events such as spring runoff. Climate change will also likely lead to significant changes in Maine's overall assemblage of plants and animals, including those living in coastal waters (Jacobson et al. 2009).

4.2 Landforms

Bangor ANGB is located in the New England Upland physiographic region that spans most of Maine (US Geological Survey [USGS] 2003). The topography visible today throughout this region is the remnant of glaciation including plateau-like uplands that gradually rise from the coast to inland areas. Topography at Bangor ANGB gently slopes from the northwest to the southeast with elevation over the majority of the Installation ranging from 154-268 feet above mean sea level (msl; ANG 2005; **Figure 8**).

SPANGS is located in Cumberland County which has extremely varied topographic relief throughout, comprising marshy coastal areas, relatively flat glacial outwash terraces, gently rolling hills, and steeply sloped uplands (Lautzenheiser 1974). Earthmoving operations during the construction and subsequent expansion of SPANGS over the past 40 years have modified the original topographic relief of the landform. The formerly gentle side slopes seen in adjacent properties are now sharply pitched within SPANGS. Elevations range from approximately 0 feet above msl near the shorelines of Clark's Pond and Jackson Brook, to almost 60 feet above msl atop an artificially mounded natural gas pipeline corridor in the extreme northwestern corner of SPANGS (ANG 2009; **Figure 9**).

4.3 Geology and Soils

The New England Upland physiographic region is a northern extension of Appalachian geology with glaciations during the Pleistocene Epoch modifying the previous land surface both through erosion and deposition. The bedrock underlying the entire southern Penobscot County region west of the Penobscot River, including Bangor ANGB, is the Vassalboro Formation. This formation is a protolith of calcareous sandstone and/or interbedded sandstone and impure limestone (ANG 2008). For locations and brief descriptions of soil series on Bangor ANGB, see **Figure 10** (NRCS 2018).

The surface geology of the South Portland area and SPANGS is comprised of the Presumpscot Formation and Swamp Deposits. The Presumpscot Formation contains 2 types of cover: (1) glaciomarine mud and clay, and (2) silt facies. The bedrock underlying the South Portland area is comprised of the Upper Precambrian to Middle Ordovician stratified rocks of southern Maine (MEANG 2015). For locations and brief descriptions of soil series on SPANGS, see **Figure 11** (NRCS 2018).

4.4 Hydrology

Bangor ANGB is located within the Lower Penobscot River Basin (USGS 2012). The majority of the Installation occurs within the Lower Kenduskeag Stream watershed with the northwestern tip located within the Lower Souadabscook Stream watershed. All of these watersheds ultimately drain into Penobscot Bay and then into the Atlantic Ocean (**Figure 12**). Bangor ANGB is underlain by 2 aquifers, one of which is the primary source of groundwater in Maine.

SPANGS is located in the Fore River Watershed. The major surface water feature in the vicinity of the Installation is Clark's Pond, located approximately 600 feet south (**Figure 13**). Water generally flows in an easterly direction from the Installation to Clark's Pond and eventually into the Atlantic Ocean (MEANG 2015).

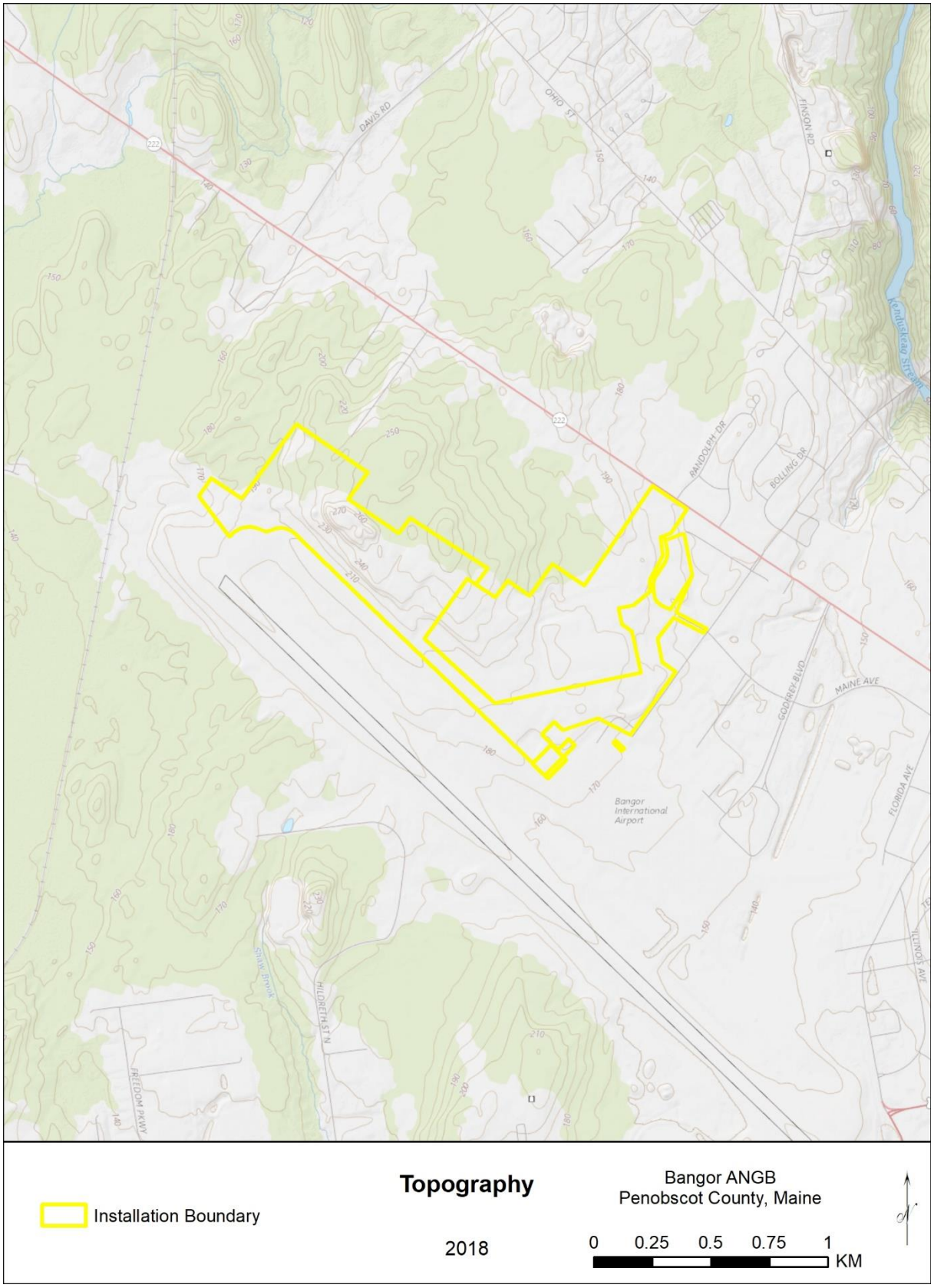

Figure 8. Bangor ANGB Topography Map

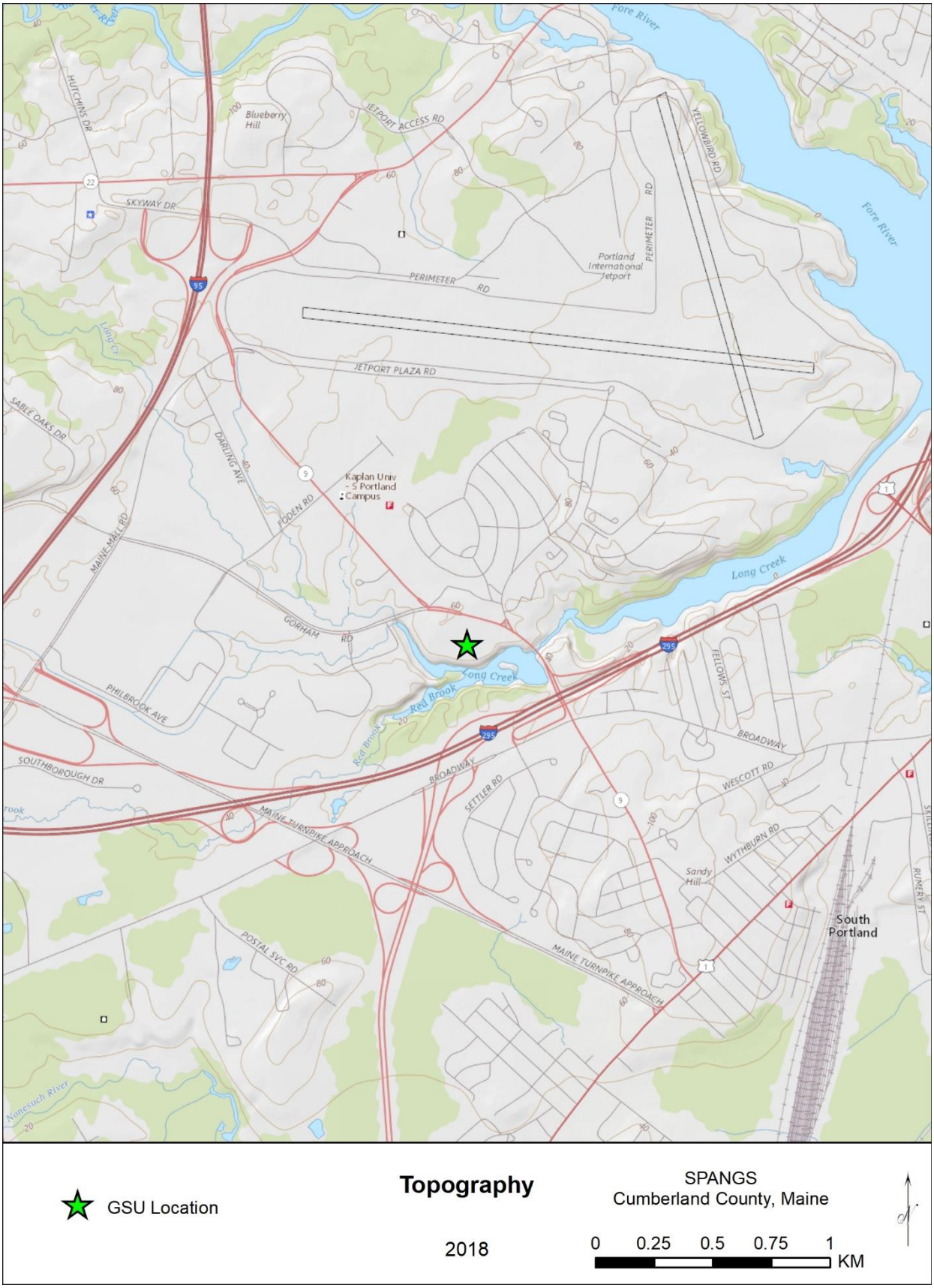

Figure 9. SPANGS Topography Map

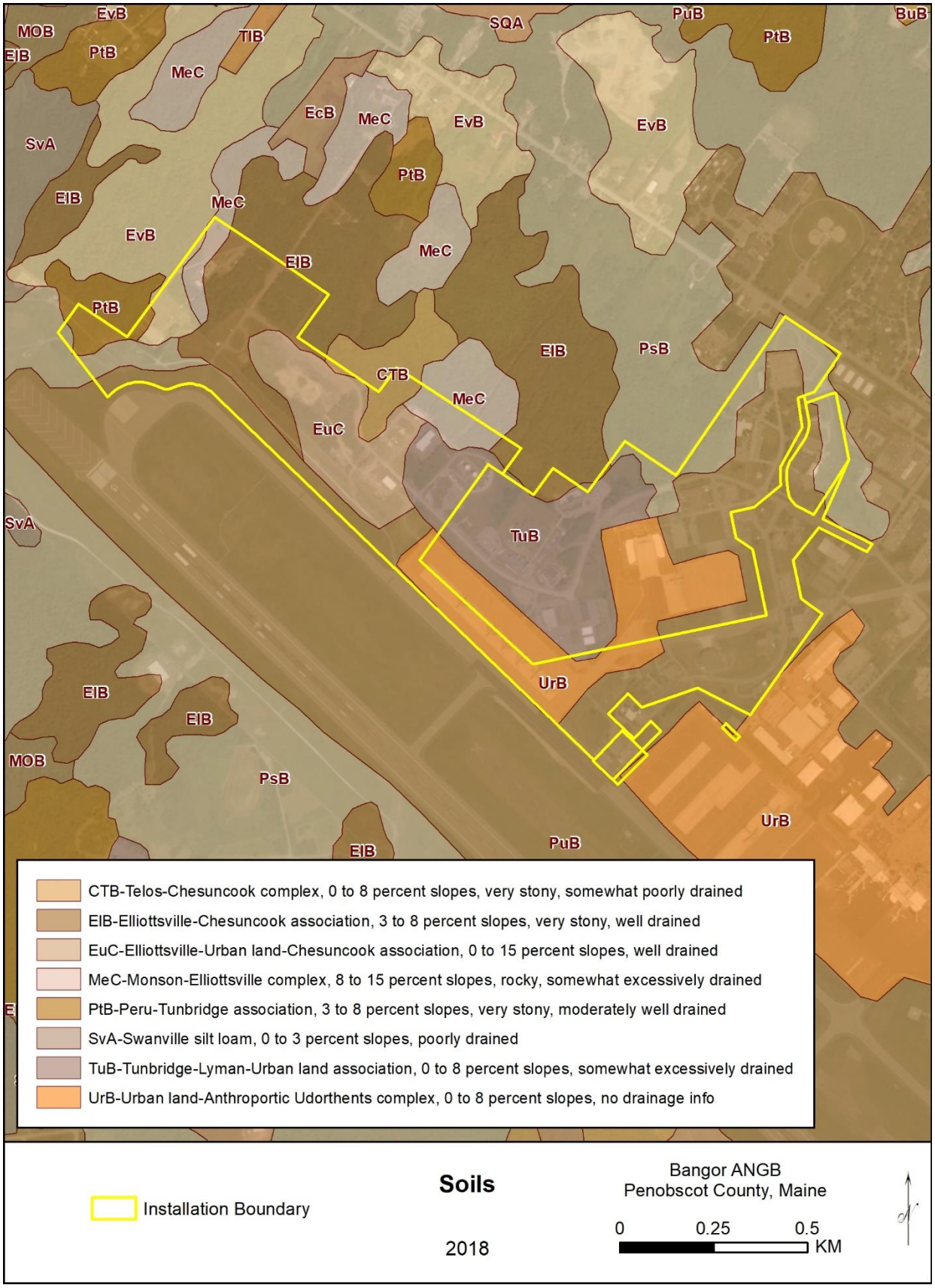

Figure 10. Bangor ANGB Soils Map

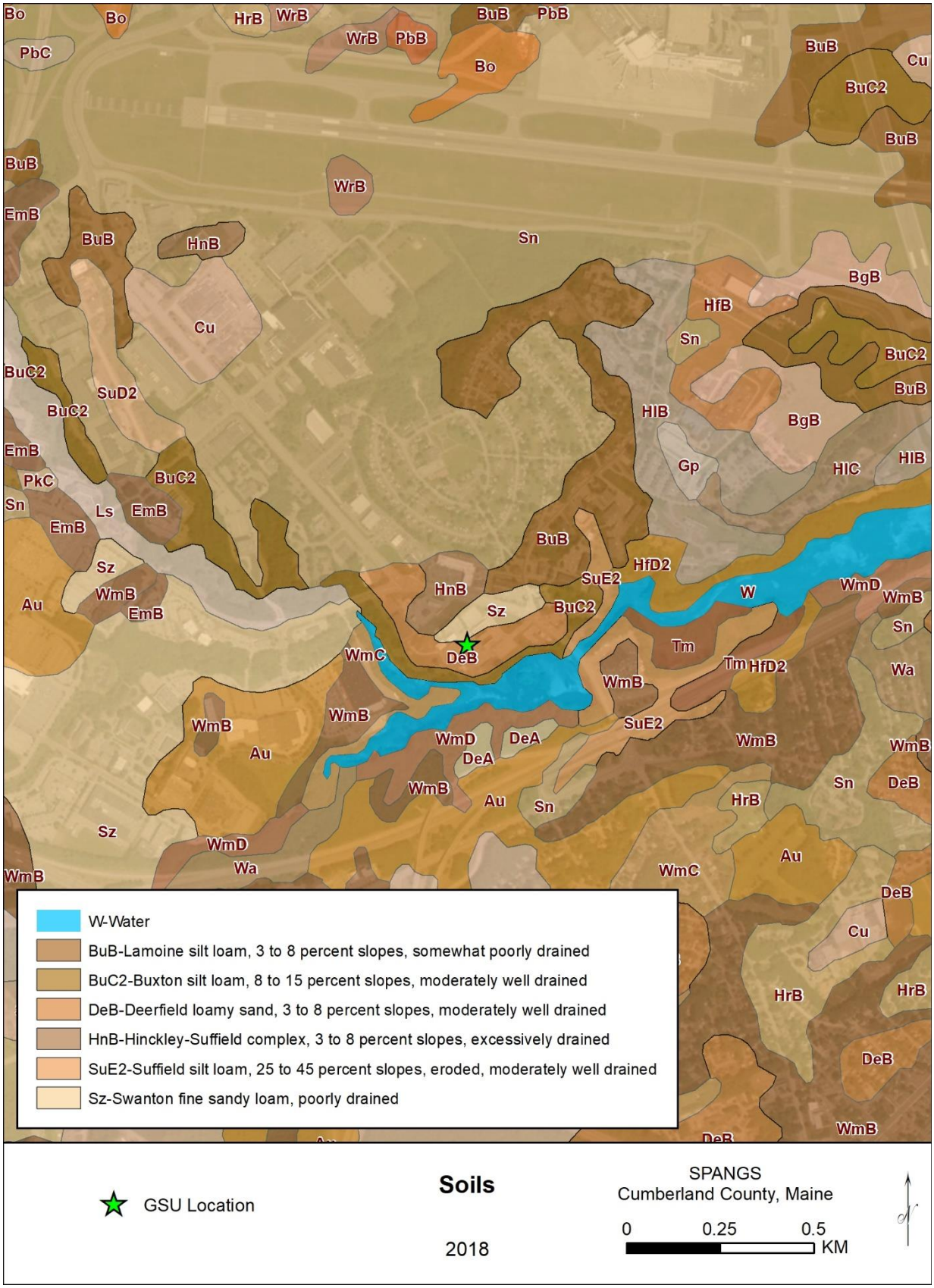

Figure 11. SPANGS Soils Map

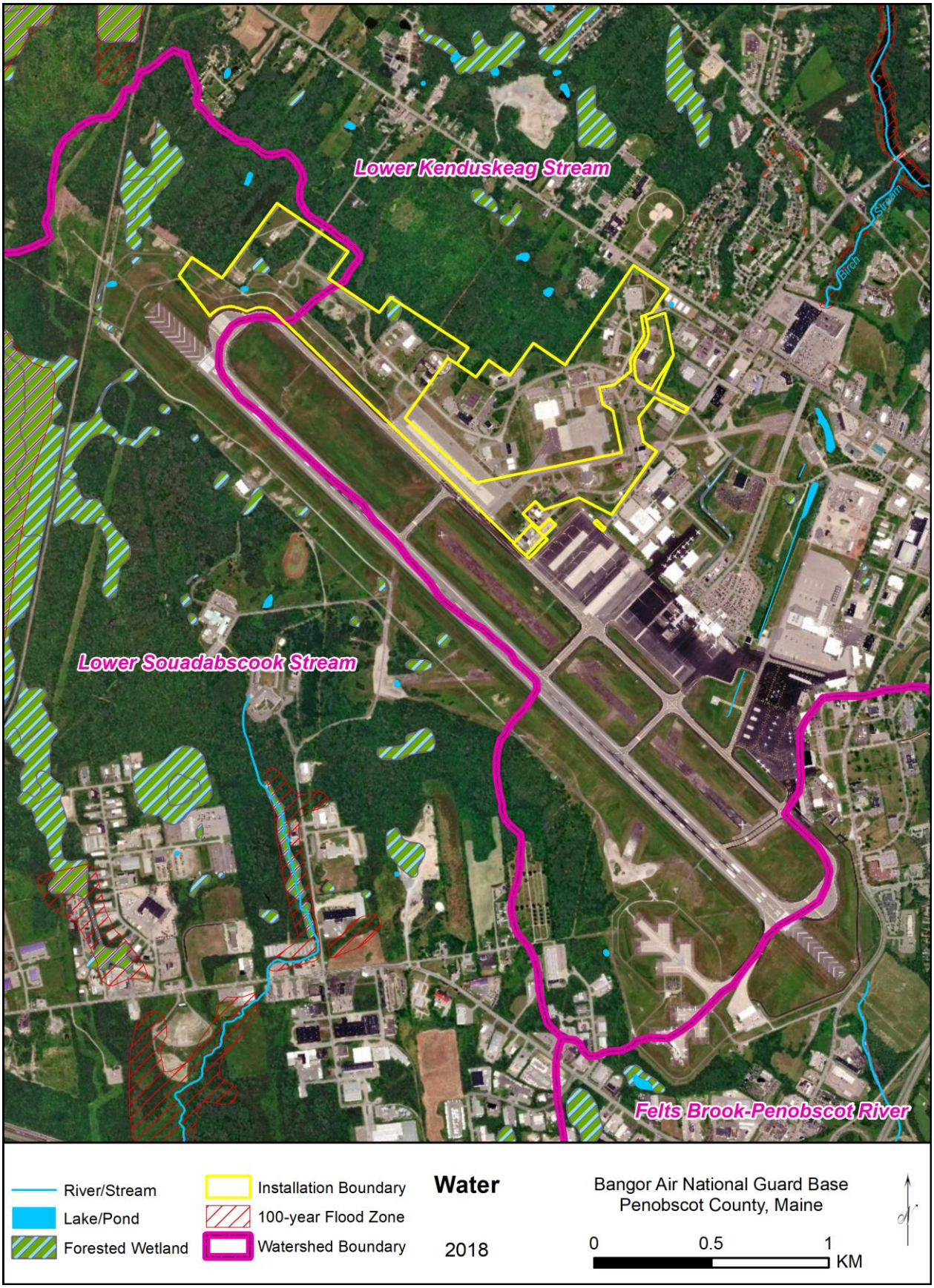

Figure 12. Bangor ANGB Water Resources Map

Figure 13. SPANGS Water Resources Map

5.0 ECOSYSTEMS AND THE BIOTIC ENVIRONMENT

5.1 Ecosystem Classification

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

5.2 Vegetation

5.2.1 Historic Vegetative Cover

The area surrounding Bangor ANGB includes northern hardwoods and northern hardwoods-spruce forests as the major forest types with scattered sugar maples (*Acer saccharum*), big-tooth aspen (*Populus grandidentata*), paper birch (*Betula papyrifera*), and white pine (*Pinus strobus*; McNab and Avers 1994).

5.2.2 Current Vegetative Cover

A vegetation survey completed for Bangor ANGB in 2015 documented the presence and extent of vegetative communities and other land cover (ANG 2015). The survey concluded that Bangor ANGB was comprised of 5 natural vegetative communities (14 acres), 2 semi-natural communities (19 acres), and 4 developed vegetative communities (129 acres). A description of each of these vegetative communities is described below. **Table 2** lists all vascular plant species found at Bangor ANGB.

Natural Communities: The 5 natural communities include 2 types of cool temperate forests, 2 types of temperate flooded forests, and 1 type of swamp shrubland:

- Cool Temperate Forests:
  - White Pine-Hemlock-Red Spruce Forest
  - Northern White-cedar Mesic Rocky Woodland
- Temperate Flooded Forests:
  - Northern Red Maple Swamp
  - Red Maple Wooded Fen
- Swamp Shrubland
  - Gray Alder Swamp

Semi-Natural Communities: The 2 semi-natural communities are successional, mixed hardwood forests. These communities are categorized as semi-natural because of significant site disturbances in the past or current fragmented state.

- Northeastern Oak-Red Maple Successional Forest
- Sugar Maple-Birch/American Beech Successional Forest

Developed Vegetation Communities: The developed vegetation type is described as Eastern white pine planted forest (less than <1 acre). While this habitat is classified as a “developed”, it does not receive regular maintenance and white pine is considered a native species. It likely will transition

to a more "semi-natural" state over time without active management. Other developed communities include maintained landscaping areas around buildings, mowed/maintained fields, and man-made drainage ditches and wet areas. The vast majority of Bangor ANGB is either developed or maintained vegetative cover (128 acres, not including the forest plantation) or impervious cover (112 acres).

Table 2. Vascular Plant Species at Bangor ANGB

Scientific Name	Common Name	Scientific Name	Common Name
Abies balsamea	balsam fir	*Hamamelis virginiana*	witch-hazel
Acer pensylvanicum	striped maple	*Hieracium aurantiacum*	orange hawkweed
Acer rubrum	red maple	*Ilex verticillata*	common winterberry
Acer saccharum	sugar maple	*Impatiens capensis*	jewelweed
Achillea millefolium	common yarrow	*Juncus effuses*	soft rush
Alisma subcordatum	water plantain	*Juncus tenuis*	slender rush
Alnus incana	speckled alder	*Leucanthemum vulgare*	oxeye daisy
Ambrosia artemisiifolia	common ragweed	*Lonicera morrowii*	morrow's honeysuckle
Amphicarpaea bracteata	American hog-peanut	*Ludwigia palustris*	swamp seedbox
Aralia nudicaulis	wild spikenard	*Lycopus uniflorus*	northern bugleweed
Arctium minus	common burdock	*Lythrum salicaria*	purple loosestrife
Arisaema triphyllum	Jack-in-the-pulpit	*Maianthemum canadense*	false lily-of-the-valley
Artemesia vulgaris	common mugwort	*Maianthemum racemosum*	false Solomon's-seal
Asclepias syriaca	common milkweed	*Mitchella repens*	partridgeberry
Athyrium filix-femina	lady fern	*Onoclea sensibilis*	sensitive fern
Berberis vulgaris	common barberry	*Osmunda cinnamomea*	cinnamon fern
Betula alleghaniensis	yellow birch	*Osmunda claytoniana*	interrupted fern
Betula lenta	black birch	*Osmunda regalis*	royal fern
Betula papyrifera	paper birch	*Parathelypteris noveboracensis*	New York fern
Betula populifolia	gray birch	*Parthenocissus quinquefolia*	Virginia creeper
Bidens connata	purple-stem beggar-ticks	*Penthorum sedoides*	ditch stonecrop
Bidens frondosa	devil's beggar-ticks	*Persicaria arifolia*	halberd-leaf tear-thumb
Carex crinite	fringed sedge	*Persicaria hydropiperoides*	swamp smartweed
Carex lurida	sallow sedge	*Persicaria pensylvanica*	pinkweed
Carex stricta	tussock sedge	*Persicaria sagittata*	arrow-leaf tear-thumb
Cornus alba	red-osier dogwood	*Phalaris arundinacea*	reed canary-grass
Cornus alternifolia	alternate-leaf dogwood	*Phleum pratense*	timothy
Cornus canadensis	Canada bunchberry	*Phragmites australis*	common reed
Cornus sericea	red-osier dogwood	*Picea glauca*	white spruce
Corylus cornuta	beaked hazelnut	*Pilea pumila*	clearweed
Dactylis glomerata	orchard grass	*Pinus strobus*	eastern white pine
Daucus carota	Queen Anne's lace	*Plantago lanceolata*	English plantain
Dennstaedtia punctilobula	hay-scented fern	*Plantago major*	common plantain
Dichanthelium clandestinum	deer-tongue witchgrass	*Polygonum cuspidatum*	Japanese knotweed
Dryopteris cristata	crested shield fern	*Populus balsamifera*	balsam poplar
Echinochloa crus-galli	large barnyard grass	*Populus deltoides*	eastern cottonwood
Epilobium coloratum	narrow-leaved willow-herb	*Populus grandidentata*	bigtooth aspen
Epipactis helleborine	hellebore	*Populus tremuloides*	quaking aspen
Equisetum arvense	field horsetail	*Prunus serotina*	black cherry
Eupatorium perfoliatum	common boneset	*Prunus virginiana*	choke cherry
Fagus grandifolia	American beech	*Pteridium aquilinum*	bracken fern
Fragaria vesca	woodland strawberry	*Quercus rubra*	red oak
Fraxinus americana	white ash	*Ranunculus hispidus*	bristly buttercup
Fraxinus nigra	black ash	*Rhamnus cathartica*	common buckthorn
Fraxinus pennsylvanica	green ash	*Rhus typhina*	staghorn sumac
Galium triflorum	sweet-scented bedstraw	*Rosa multiflora*	multiflora rose

Table 2. Vascular Plant Species at Bangor ANGB			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Gaultheria procumbens	eastern teaberry	*Rubus allegheniensis*	allegheny blackberry
Salix bebbiana	Bebb's willow	*Toxicodendron radicans*	poison ivy
Salix c.f. *eriocephala*	sandbar willow	*Trientalis borealis*	starflower
Salix discolor	pussy willow	*Trifolium arvense*	rabbit-foot clover
Salix x *pendulina*	weeping willow	*Trifolium pratense*	red clover
Sambucus nigra	American elderberry	*Trifolium repens*	white clover
Scirpus rubrotinctus	panicled bulrush	*Tsuga Canadensis*	eastern hemlock
Solanum dulcamara	climbing nightshade	*Tussilago farfara*	colts-foot
Solidago canadensis	Canada goldenrod	*Typha latifolia*	broad-leaved cattail
Solidago rugosa	wrinkled goldenrod	*Ulmus americana*	American elm
Spiraea alba	broad-leaved meadowsweet	*Urtica dioica*	stinging nettle
Sphagnum sp.	sphagnum moss	*Verbascum Thapsus*	common mullein
Symphyotrichum lanceolatum	white-panicled American aster	*Vibumum cassanoides*	wild raisin
Symphyotrichum novae-angliae	New England aster	*Viburnum acerifloium*	maple-leaf viburnum
Taraxacum offcinale	common dandelion	*Viburnum dentatum*	southern arrow-wood
Thuja occidentalis	northern white cedar	*Viburnum nudum*	possum-haw
Tilia Americana	American basswood	*Vicia cracca*	cow vetch
Source: ANG 2012 (Aquatic Resources Report); Burman 2011, ANG 2015			

On SPANGS, manicured lawns surround the central complex of administrative, personnel support, vehicle storage/maintenance, and refueling facilities. Decorative trees, shrubs, and flowers adorn the walkways, streets, and exterior of several buildings in the central compound. Occasional stands of briars, brush, saplings, and high weeds dot the fence line perimeter adjacent to Jackson Brook and Clark's Pond (ANG 2008).

5.3 Fish and Wildlife

The only formal wildlife surveys conducted on Bangor ANGB have been in support of the BASH Plan or emphasized bird and mammal surveys that pose a hazard to aviation (MEANG 2017a; see **Section 7.9.4**). No herpetofauna, invertebrate, or general wildlife surveys have been conducted on Bangor ANGB or SPANGS.

In reviewing the area surrounding the Installation, the area northwest of Bangor ANGB is comprised primarily of forested areas, much of which is mapped as a Deer Wintering Area (DWA #020529) of indeterminate status. Several wetland areas also are located in close proximity to Bangor ANGB that attract a variety of waterfowl and migratory birds. Native vegetation within the Installation boundaries are generally highly disturbed, developed, or maintained grasslands, attracting wildlife species that are adapted to high levels of human activity and disturbance. Several species of birds are attracted to the tarmac area for access to grit (i.e. stones used to aid in the digestion) or to nest. While the airfield is surrounded by both a wildlife fence and additional security fence, wildlife such as white-tailed deer (*Odocoileus virginianus*), coyotes (*Canis latrans*), and moose (*Alces americanus*) have been noted within the airport (MEANG 2017a). Birds, mammals, and herpetofauna species recorded at Bangor ANGB or, more generally, in Penobscot County, Maine are described in **Tables 3-5**.

Table 3. Bird Species in Penobscot County, ME			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Accipiter agilis	northern goshawk	*Columba livia*	rock pigeon
Accipiter cooperii	Cooper's hawk	*Contopus borealis*	olive-sided flycatcher
Accipiter striatus	sharp-shinned hawk	*Contopus virens*	eastern wood pewee
Actitis macularia	spotted sandpiper	*Corvus brachyrhynchos*	American crow
Aegolius acadicus	northern saw-whet owl	*Corvus corax*	common raven
Agelaius phoeniceus	red-winged blackbird	*Cyanocitta cristata*	blue jay
Aix sponsa	wood duck	*Dendroica caerulescens*	black-throated blue warbler
Alca torda	razorbill	*Dendroica castenea*	bay-breasted warbler
Anas crecca	green-winged teal	*Dendroica coronata*	yellow-rumped warbler
Anas discors	blue-winged teal	*Dendroica fusca*	blackburnian warbler
Anas platyrhynchos	mallard	*Dendroica magnolia*	magnolia warbler
Anas rubripes	American black duck	*Dendroica palmarum*	palm warbler
Anthus spinoletta	American pipit	*Dendroica pensylvanica*	chestnut-sided warbler
Archilochus colubris	ruby-throated hummingbird	*Dendroica petechia*	yellow warbler
Ardea herodias	great blue heron	*Dendroica pinus*	pine warbler
Aythya collaris	ring-necked duck	*Dendroica striata*	blackpoll warbler
Bombycilla cedrorum	cedar waxwing	*Dendroica tigrina*	cape may warbler
Bonasa umbellus	ruffed grouse	*Dendroica virens*	black-throated green warbler
Botaurus lentiginosus	American bittern	*Dolichonyx oryzivorus*	bobolink
Branta canadensis	Canada goose	*Dryocopus pileatus*	pileated woodpecker
Bubo virginianus	great horned owl	*Dumatella carolinensis*	gray catbird
Bucephala albeola	bufflehead	*Empidonax alnorum*	alder flycatcher
Bucephala clangula	common goldeneye	*Empidonax flaviventris*	yellow-bellied flycatcher
Bucephala islandica	Barrow's goldeneye	*Empidonax minimus*	least flycatcher
Buteo jamaicensis	red-tailed hawk	*Empidonax traillii*	willow flycatcher
Buteo lagopus	rough-legged hawk	*Eremophila alpestris*	horned lark
Buteo lineatus	red-shouldered hawk	*Euphagus carolinus*	rusty blackbird
Buteo platypterus	broad-winged hawk	*Falco columbarius*	merlin
Butorides striatus	green-backed heron	*Falco peregrinus*	peregrine falcon
Calcarius lapponicus	lapland longspur	*Pheucticus ludovicianus*	rose-breasted grosbeak
Caprimulgus vociferus	whip-poor-will	*Picoides arctus*	black-backed woodpecker
Cardinalis	northern cardinal	*Picoides pubescens*	downy woodpecker
Carduelis flammea	common redpoll	*Picoides villosus*	hairy woodpecker
Carduelis pinus	pine siskin	*Pinicola enucleator*	pine grosbeak
Carduelis tristis	American goldfinch	*Pipilo erythrophthalamus*	rufous-sided towhee
Carpodacus mexicanus	house finch	*Hirundo pyrrhonota*	cliff swallow
Carpodacus purpureus	purple finch	*Hirundo rustica*	barn swallow
Cathartes aura	turkey vulture	*Hylocichla mustelina*	wood thrush
Gallinago gallinago	common snipe	*Icterus galbula*	northern oriole
Geothlypis trichas	common yellowthroat	*Junco hyemalis*	dark-eyed junco
Haliaeetus leucocephalus	bald eagle	*Lanius excubitor*	northern shrike
Falco sparverius	American kestrel	*Larus argentatus*	herring gull
Catharus fuscescens	veery	*Larus delawarensis*	ring-billed gull
Catharus guttatus	hermit thrush	*Larus marinus*	great black-backed gull
Certhia americana	brown creeper	*Larus philadelphia*	Bonaparte's gull
Ceryle alcyon	belted kingfisher	*Lophodytes cucullatus*	hooded merganser
Chaetura pelagica	chimney swift	*Loxia curvirostra*	red crossbill
Charadrius vociferous	killdeer	*Loxia leucoptera*	white-winged crossbill
Chordeiles minor	common nighthawk	*Melanitta fusca*	white-winged scoter
Circus cyaneus	northern harrier	*Melanitta nigra*	black scoter
Coccothraustes vespertinus	evening grosbeak	*Meleagris gallopavo*	wild turkey
Coccyzus americanus	yellow-billed cuckoo	*Melospiza georgiana*	swamp sparrow
Coccyzus erythropthalamus	black-billed cuckoo	*Melospiza lincolnii*	Lincoln's sparrow
Colaptes auratus	northern flicker	*Melospiza melodia*	song sparrow

Table 3. Bird Species in Penobscot County, ME

Scientific Name	Common Name	Scientific Name	Common Name
Colaptes auratus	common flicker	*Mergus merganser*	common merganser
Mergus serrator	red-breasted merganser	*Sayornis phoebe*	eastern phoebe
Mimus ployglottos	northern mockingbird	*Scolopax minor*	American woodcock
Mniotilta varia	black-and-white warbler	*Seiurus aurocapillus*	ovenbird
Molothrus ater	brown-headed cowbird	*Seiurus noveboracensis*	northern waterthrush
Myiarchus crinitus	great crested flycatcher	*Setophaga ruticilla*	American redstart
Nyctea scandiaca	snowy owl	*Sialia sialis*	eastern bluebird
Oporornis philadelphia	mourning warbler	*Sitta canadensis*	red-breasted nuthatch
Pandion haliaetus	osprey	*Sitta carolinensis*	white-breasted nuthatch
Parula americana	northern parula	*Somateria mollissima*	common eider
Parus atricapillus	black-capped chickadee	*Sphyrapicus varius*	yellow-bellied sapsucker
Passer domesticus	house sparrow	*Spizella arborea*	American tree sparrow
Passerculus sandwichensis	savannah sparrow	*Spizella passerina*	chipping sparrow
Passerella iliaca	fox sparrow	*Spizella pusilla*	field sparrow
Passerina cyanea	indigo bunting	*Stelgidopteryx serripennis*	northern rough-winged swallow
Perisoreus canadensis	gray jay	*Strix varia*	barred owl
Phalacrocorax auritus	double-crested cormorant	*Sturnella magna*	eastern meadowlark
Vermivora peregrina	Tennessee warbler	*Sturnus vulgaris*	European starling
Vermivora ruficapilla	Nashville warbler	*Tachycineta bicolor*	tree swallow
Vireo olivaceus	red-eyed vireo	*Toxostoma rufum*	brown thrasher
Vireo philadelphicus	philadelphia vireo	*Tringa melanoleuca*	greater yellowlegs
Vireo solitarius	solitary vireo	*Tringa solitaria*	solitary sandpiper
Piranga olivacea	scarlet tanager	*Troglodytes aedon*	house wren
Plectrophenax nivalis	snow bunting	*Troglodytes hiemalis*	winter wren
Podilymbus podiceps	pied-billed grebe	*Turdus migratorius*	American robin
Poecile atricapilla	black-capped chickadee	*Tyrannus tyranus*	eastern kingbird
Pooecetes gramineus	vesper sparrow	*Wilsonia canadensis*	Canada warbler
Porzana carolina	sora	*Wilsonia pusilla*	Wilson's warbler
Quiscalus quiscula	common grackle	*Zenaida macroura*	mourning dove
Regulus satrapa	golden-crowned kinglet	*Zonotrichia albicollis*	white-throated sparrow
Riparia riparia	bank swallow	*Zonotrichia leucophrys*	white-crowned sparrow

Source: ANG 2012; MEANG 2017a; ANG 2015

Table 4. Mammal Species at Bangor ANGB

Scientific Name	Common Name
Alces alces	moose
Canis domesticus	domestic dog
Canis latrans	coyote
Lynx canadensis	Canada lynx*
Marmota monax	woodchuck
Martes pennanti	fisher
Microtus pennsylvanicus	meadow vole
Odocoileus virginianus	white-tailed deer
Ondatra zibethica	muskrat
Peromyscus sp.	mice
Tamias Striatus	eastern chipmunk
Tamiasciurus hudsonicus	red squirrel
Vulpes vulpes	red fox

Source: ANG 2012 (Aquatic Resources Report), MEANG 2017a, ANG 2015.
*single occurrence

Table 5. Herpetofauna Species at Bangor ANGB	
Scientific Name	**Common Name**
Amphibians	
Bufo americanus	American Toad
Lithobates clamitans melanota	green frog
Pseudacris crucifer	northern spring peeper
Reptiles	
Thamnophis sirtalis	eastern garter snake
Source: ANG 2012 (Aquatic Resources Report), ANG 2015	

5.4 Threatened and Endangered Species and Species of Concern

Federal status as a threatened or endangered species is derived from the ESA of 1973 (16 USC §1531 et seq.) and administered by the USFWS or the NMFS depending on the species. Maine's Endangered Species Act (MESA; pursuant to 12 Maine Revised Statutes Annotated [MRSA] Chapter 925, §§12801-12810) provides MDIFW with a mandate to conserve species of fish or wildlife that have been and are in danger of being rendered extinct within the State of Maine as well as the ecosystems upon which they depend. Eight priority species for Bangor ANGB were identified (3 mammal, 3 birds, 1 fish, and 1 plant) based on their regulatory status, known occurrence on or near Bangor ANGB, or their likelihood of occurring on Bangor ANGB.

State-listed birds anticipated to rarely use the site and only in a transient manner were not considered priority species. Additionally, the red knot (federally-listed as threatened) and Canada lynx (federally-listed as threatened) were not included as a priority species because there is no habitat on or adjacent to the Installation and any sightings would be of rare, transient migrants. The northern long-eared bat was federally-listed as threatened in May 2015 and state-listed in October 2015, and is believed to occur in Penobscot County and Cumberland County, Maine. Surveys will be performed to confirm these priority species presence on Bangor ANGB or SPANGS (USFWS 2018).

Federal Special Status Species:

- Endangered Atlantic salmon (*Salmo salar*)
- Threatened northern long-eared bat (*Myotis septentrionalis*)
- Protected under BGEPA bald eagle (*Haliaeetus leucocephalus*)

State Special Status Species

- Threatened upland sandpiper (*Bartramia longicauda*)
- Endangered peregrine falcon (*Falco peregrinus*)
- Threatened Orono sedge (*Carex oronensis*)
- Endangered little brown bat (*Myotis lucifugus*)
- Threatened eastern small-footed bat (*Myotis leibii*)

5.5 Waters of the US, Wetlands, and Floodplains

No natural open water bodies occur on Bangor ANGB however, 3 small detention/infiltration ponds and 1 medium detention pond are found on site. The nearest stream outside of the installation is Birch Stream. Birch Stream is a tributary of Kenduskeag Stream, which drains into the Penobscot River. Bangor ANGB is situated approximately 1 mile west of Kenduskeag Stream, 1 mile east of Osgood Brook, 1 mile north of Shaw Brook, 3 miles northwest of the

Penobscot River, and 1 mile east of Hermon Bog, which is a large wetland complex associated with Hermon Pond. Penobscot River and Birch Stream are listed as Impaired Waters in the 2010 303(d) Report (Maine Department of Environmental Protection [MDEP] 2010).

There are 4 wetlands based on a 2014 water resources survey conducted at Bangor ANGB (ANG 2014). Wetlands W1 and W2 border the gravel perimeter road located west of the main gate. Wetland W3 is directly north of Maineiace Avenue, and Wetland W4 occurs in the northwestern part of Bangor ANGB. Three of the 4 may include vernal pools under Maine law and all 4 are confirmed as jurisdictional by the US Army Corps of Engineers (USACE). In addition to the wetlands located within Bangor ANGB boundaries, there are a number of additional wetlands that surround the Installation, particularly to the west.

As shown on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps from March 2002, Bangor ANGB is located within Zone X, indicating that the Installation is located outside the 100-year and 500-year floodplains (FEMA 2002). The nearest 100-year floodplains are approximately 0.4 mile or greater from the Installation boundary and are associated with Osgood Brook to the north, Shaw Brook to the south, and Kenduskeag Stream to the east (**Figure 12**). SPANGS is also located within Zone X and is therefore outside the 100-year and 500-year floodplains (FEMA 1985). The nearest 100-year floodplain is adjacent to SPANGS along Long Creek (**Figure 13**).

MEANG fenceline wetland

5.6 Other Natural Resource Information

As directed by EO 11989, Off Road Vehicles on Public Lands, outlines the use of any off-road vehicles (ORV), including mountain bikes, will be allowed only after thoroughly analyzing the impact of such use on soils, archeological sites, wildlife, water quality, and other ecosystem

attributes. MEANG will periodically monitor and evaluate for damage any areas designated for ORV use.

6.0 MISSION IMPACTS ON NATURAL RESOURCES

6.1 Natural Resources Needed to Support the Military Mission

The MEANG requires operation areas to support flying operations, facilities, and other support functions, with the surrounding areas providing a buffer to reduce BASH risk. 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 MEANG needs the Installation lands and its natural resources to work together in a functioning ecosystem to support the military mission. Management activities in this INRMP are designed to support the desired habitats and ecosystem functions to meet this objective.

6.2 Natural Resources Constraints to Mission and Mission Planning

The most significant natural resource constraints to Bangor ANGB's mission and mission planning are related to wetlands, water quality protection, reducing BASH risk, and protecting federally and state-listed, threatened and endangered species. Any new activities or infrastructure could be limited in areas where federal or state-listed species are found to be present in the future.

The primary sustainability challenges on Bangor ANGB both currently and projected in the near future are the ability to (1) manage federally and state-listed species without impacting the mission, (2) protecting water quality in Birch Stream and Kenduskeag Stream, and (3) manage BASH risk. The following natural resources management issues have been identified as having the greatest potential to impact the military mission:

- Lack of information about species present, particularly listed species.

Future challenges for Bangor ANGB may include changes in significant mission requirements, additional infrastructure development, or a significant increase of on-the-ground training.

<u>Land Use</u>
Bangor ANGB, which is located immediately adjacent to BGR, is used primarily by the 101 ARW. On the Installation, there are 40 facilities including 1 structure constructed in 1942 and 17 structures constructed between 1947 and 1989 (ANG 2008). The remaining structures were built after 1989 and include administrative buildings, warehouses, munitions storage, and other miscellaneous buildings (ANG 2008).

<u>Current Major Impacts</u>
There are 4 primary areas of potential impacts to natural resources from MEANG's military mission:

- Impacts to water quality in Birch Stream, Kenduskeag Stream, Souadabscook Stream, and Penobscot River.
- Impacts to migratory birds (managed through the BASH program).
- Impacts to federally-listed and state-listed species.

- Wetland and shoreland zone management.

Potential Future Impacts
There are no known projected changes in mission or potential impacts to natural resources.

7.0 NATURAL RESOURCES PROGRAM MANAGEMENT

7.1 Natural Resources Program Management

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

7.2 Fish and Wildlife Management

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

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

Fish and wildlife management at Bangor ANGB will focus on maintaining and restoring natural habitat favorable for indigenous fish and wildlife in a manner consistent with the military mission and all applicable laws and regulations. Bangor ANGB supports numerous native species including 3 federally protected and 5 state-listed priority species. In addition to general fish and wildlife management, there are management needs associated with minimizing BASH-related risk at Bangor ANGB because the military mission involves flight operations.

The State of Maine's Natural Resources Protection Act (NRPA) designates and protects Significant Wildlife Habitats (SWHs) which host high concentrations of important wildlife populations and receive careful environmental review that may lead to restrictions on certain intensive land-use activities within and adjacent to the SWH, even if the adjacent land is not a wetland. SWHs include both Tidal and Inland Waterfowl and Wading Bird Habitats, Seabird Nesting Islands, Shorebird Areas, and Significant Vernal Pools (SVPs). The only known areas of significant wildlife habitat are deer wintering areas approximately 0.5 mile to the west of Bangor ANGB. A comprehensive statewide inventory for SVPs has not been completed at this time; however, there are 3 wetlands with the potential to be SVPs onsite based on a survey conducted at Bangor ANGB in 2012 (ANG 2014).

7.2.1 Federal Wildlife Policies and Regulations

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits, unless permitted by regulations, the pursuit, hunting, take, capture, killing or attempting to take, capture, kill, or possess any migratory bird included in the MBTA, including any part, nest, or egg of any such bird (16 USC § 703). The DoD has a Memorandum of Understanding (MOU) with the USFWS pursuant to EO 13186 Responsibilities of Federal Agencies to Protect Migratory Birds, which outlines a collaborative approach to promote the conservation of migratory bird populations. This MOU specifically pertains to natural resource management activities, including, but not limited to, habitat management, erosion control, forestry activities, invasive weed management, and prescribed burning. It also pertains to Installation support functions, operation of industrial activities, construction and demolition activities, and hazardous waste cleanup. In February 2007, the USFWS finalized regulations for issuing incidental take permits to the DoD. If any of the Armed Forces determine that a proposed or an ongoing military readiness activity may result in a significant adverse effect on a population of migratory bird species, then they must confer and cooperate with the USFWS to develop appropriate and reasonable conservation measures to minimize or mitigate identified significant adverse effects (50 CFR Part 21).

Bald and Golden Eagle Protection Act

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

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

Partners in Flight

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

Pollinator Conservation

The DoD has emphasized the importance of pollinator conservation to the military services by developing partnerships to support their conservation. DoD has MOUs with Bat Conservation International (BCI) and Pollinator Partnership (P2) and has developed the USAF Pollinator Conservation Reference Guide (March 2018). The MOU with BCI "establishes a policy of cooperation and coordination between DoD and BCI to identify, document, and maintain bat

populations and their habitats on DoD Installations" (signed Oct 2006, renewed Dec. 2011). The MOU with P2 is "to establish a framework for cooperative programs that promote the conservation and management of pollinators, their habitats and associated ecosystems" (signed February 9, 2015).The MOU states that this framework is important to "ensure that pollinator management activities are incorporated where practicable, into INRMPs and practices." Conservation of pollinators by USAF alone or in collaboration with groups such as BCI and P2 supports these DoD initiatives.

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

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

Essential Habitat

MESA includes provisions to protect habitat for endangered and threatened species in Maine. These provisions give MDIFW the authority to designate areas as "Essential Habitat" for species listed as endangered or threatened and develop protection guidelines for these Essential Habitats. Essential Habitats are defined as areas currently or historically providing physical or biological features essential to the conservation of an endangered or threatened species, such as nest sites or important feeding areas. However, before an area can become designated as Essential Habitat, it must be identified and mapped by MDIFW and adopted through public rulemaking procedures.

In Maine, Essential Habitat has been designated for a number of wildlife species. Per the MESA, no state agency or municipality shall permit, license, fund, or carry out projects that would significantly alter the habitat or violate protection guidelines adopted for the habitat. MDIFW is required to review all projects within designated Essential Habitat that are implemented by a state agency or municipality or that require permits from state or local government agencies. Currently, Essential Habitat is designated only for piping plovers, least terns, and roseate terns, which are coastal breeding species that do not occur in this area. Accordingly, there are no Essential Habitats designated at, or adjacent to, Bangor ANGB property at this time.

7.2.2 Nuisance Wildlife and Wildlife Diseases

Other than those that present a BASH risk, there are few nuisance wildlife species at Bangor ANGB or SPANGS. Future nuisance wildlife problems will be evaluated in conjunction with USDA-WS personnel, if appropriate, and any solutions will follow the IPM and BASH Plans.

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

7.2.3 Management of Threatened and Endangered Species and Habitats

This section presents information about the management of priority species that are located within, or with the potential to occur at Bangor 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 8 priority species.

7.2.3.1 Federally Special Status Wildlife Species

The MEANG is required to manage for federally protected species. Failure to protect federally listed species could lead to an ESA violation, which could negatively impact training land availability. Five federally-listed priority species have been identified for Bangor ANGB and their management strategies are listed below.

Atlantic salmon
Photo by USFWS

Atlantic salmon: In Maine, Atlantic salmon are still found in several rivers, including the Kenduskeag Stream and the Penobscot River (US Atlantic Salmon Assessment Committee [USASAC] 2018). Bangor ANGB is located approximately 0.75 miles southwest of the Kenduskeag Stream and 3 miles northwest of the Penobscot River. Although the passage of Atlantic salmon into Birch Stream is precluded by a steep falls, the protection of Birch Stream's water quality is important due to its connectivity with Kenduskeag Stream. Juvenile, adult, and smolt survival are all affected by land activities adjacent to spawning rivers that result in siltation, chemical contaminants, and water withdrawals. The following management strategies for the Atlantic salmon are recommended:

- Minimize the use of pesticides, particularly broad-spectrum use.
- Prevent surface water pollution by ensuring environmental plans (e.g. MS4) are followed.
- Maintain shoreland zones around water resources.

Northern long-eared bat
Photo by Animal Diversity Web

Northern long-eared bat: The northern long-eared bat's range includes all of Maine though a survey is needed to determine if they are present on Bangor ANGB. The primary reason for federal listing of this species is steep population declines due to White-Nose Syndrome (WNS; Turner et al. 2011). 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 open woodlands, along woodland edges, and along water, feeding on a variety of insect prey (Kentucky Bat Working Group 2012). The following management strategies for the northern long-eared bat are recommended:

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

Bald eagle
Photo by USFWS

Bald Eagle: Bald eagles are delisted under both the ESA and MESA but remain protected under the BGEPA. Bald eagles are vulnerable to habitat loss, decreasing food supply, human disturbance at nest sites, environmental contamination (e.g. mercury and polychlorinated biphenyls [PCBs]), diminished water quality, and human-caused deaths and injuries (MDIFW 2003a). Bald eagles are documented on BGR and Bangor ANGB as non-residents. The nearest known bald eagle nest is located approximately 1.5 miles east of the Installation near the Kenduskeag Stream (W. Mahaney, personal communication, 2018). The following management strategies for bald eagles are recommended (MDIFW 2003b):

- Use of pesticides, fertilizers, and other chemicals will be done in accordance with the ANG Pest Management Program including the Installation's Integrated Pest Management Plan (IPMP).
- Monitor the presence and location of existing bald eagle nests. Movement of nests closer to Bangor ANGB should be discussed with the USFWS and MDIFW to ensure compliance with the BGEPA and Essential Habitat requirements.
- If a nest is established on or adjacent to Bangor ANGB, the MEANG will avoid exterior construction, land clearing, timber harvests, and major disturbances within a 660 feet radius of the eagle nest, particularly during the sensitive nesting season (February 1-August 31).
- If modifications to physical habitat within this area cannot be avoided (e.g. development of buildings, new roads or trails), the MEANG will consult with USFWS and/or MDIFW prior to initiating one of these undertakings.
- The City of Bangor owns the airport runways and holds the MDIFW permit required for hazing bald eagles.

7.2.3.2 State Special Status Species

The MESA provides for the protection of threatened and endangered species native to Maine. Priority state-listed species discussed below include 2 state-listed birds and 1 plant.

Upland sandpiper
Photo by USFWS

Upland sandpiper: Upland sandpiper has been documented on BGR and Bangor ANGB, which is expected given their preference for grasslands, unkempt agricultural fields, and the grassy expanses of airports. Loss and fragmentation of habitat due to increased urbanization, changes in farming practices, and natural forest succession pose the most serious threats to upland sandpiper populations (NatureServe 2011). The following management strategies for upland sandpipers are recommended (Dechant et al. 1999):

- Avoid mowing, plowing, or pesticide use during the nesting season between 1 May and 5 August. Raise the mowing bar to >6 inches to prevent nest and young bird destruction.
- Provide display perches such as fence posts, rock piles, or tree stumps where compatible with BASH management.
- Where compatible with BASH management, prohibit all disturbance of nest sites until birds have left.
- Where compatible with BASH management goals, prevent encroachment of woody vegetation in order to preserve upland sandpiper habitat.

Peregrine falcon
Photo by NYDEC

Peregrine falcon: Peregrine falcons have been documented on BGR. The open areas of the airport present an attractive hunting area for resident falcons and it is not unusual for there to be sightings at the nearby Penobscot River. Habitat is not limiting in Maine, where cliffs adjacent to large open areas are in good supply; however, human disturbance (e.g. hiking and rock climbing) during the nesting season can cause nest failure. The following management strategies for peregrine falcons are recommended (MDIFW 2010):

- Continue supporting BASH program to minimize take.
- Where compatible with BASH management goals, maintain large trees and snags in areas where peregrines forage.
- Protect wetlands used regularly by peregrine falcons at any time of the year from filling, development, or other disturbances that could alter prey abundance and habitat quality.

Orono sedge
Photo by MDOC

Orono sedge: Orono sedge occurs primarily in the Penobscot River basin in sunny, open, mesic habitats including wetlands and uplands. Due to its preference for open habitat, it appears to prefer areas with some sort of disturbance, including mowing. Changes in land use (e.g. conversion by development) and succession by wood species appear to be the most obvious threats to Orono sedge. Because this plant typically occurs along roadsides or in hayfields, populations are vulnerable to development or road maintenance. The following management strategies for Orono sedge are recommended if the species is documented on site (Maine Department of Conservation [MDOC] 2008):

- Continue maintenance activities that cause disturbance.
- Prevent forest succession in documented locations.
- Monitor any population discovered.

Little brown bat: This species hibernates in large groups in caves and mines during the winter. Since the discovery of WNS in 2006 in northeastern United States little brown bat populations have experienced die-offs with a 95% decline in winter hibernating bats from pre-WNS counts (MDIFW 2016). The following management strategies for the little brown bat are recommended:

Little brown bat
Photo by Maine.gov

- Protect large diameter snags, where they do not pose a safety hazard, particularly in the areas currently forested.
- Maintain forests with a diverse range of tree sizes and age classes.
- Maintain riparian and wetland buffers which serve as foraging habitat.
- Reduce the use of pesticides in potential bat foraging areas.
- Remove trees during the months when bats are not present

Eastern small-footed bat: This species is found in mountainous or hilly areas within or close to deciduous or evergreen forests. It is also occasionally found in mostly open farmland. In spring and summer, it roosts in crevices or underneath rocks, in rock outcrops, buildings, below bridges or in caves, mines and hollow trees. It switches roost spots daily. During winter, it hibernates most often in caves and abandoned mines, returning to the same spot every year. The eastern small-footed bat is primarily threatened by WNS which has killed well over 5 million cave-hibernating bats in eastern North America since the winter of 2006-2007 (Humphrey 2017).

Eastern small-footed bat
Photo by Ontario.gov

- Maintain existing forest and its connectivity with other forests nearby.
- Maintain existing riparian and wetland buffers which serve as foraging habitat.
- Reduce the use of pesticides in potential bat foraging areas.

7.2.3.3 Management Strategies for Special Status Species

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

- Continue supporting BASH program to minimize take of listed species.
- Update biological inventories regularly as the occurrence of listed species is subject to change over time as a result of either recruitment, responses to management activities, identification of additional protected species, or changes in the status of species currently present at Bangor ANGB.
- Maintain existing forested areas, grasslands, and wetlands, and minimize disturbance in riparian and wetland buffers.

7.3 Water and Wetland Resource Protection

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

- Consult with the EM prior to initiating projects, including any tree clearance, with the potential to directly disturb water resources or their regulated shoreland areas.
- Do not allow vehicles within known wetland areas, shoreland areas, and other water resources except where established crossings and roads exist.
- Limit tree removal and other ground disturbing activities within 250 feet of wetlands and within 75 feet of streams and stream outlets.
- Implement management controls to limit unavoidable erosion.
- Plan development to avoid wetland and floodplain impacts to the maximum extent possible and mitigate unavoidable impacts on wetland and floodplain functions.
- When impacts to waters including wetlands cannot be avoided, a Section 404 permit and Section 401 water quality certification/permit will have to be applied for and obtained prior to the commencement of any land disturbance. Mitigation may be required for the loss of acreage.
- Review operations and maintenance programs that potentially affect water resources and develop procedures and guidelines to avoid the loss of function.
- Manage invasive species to promote desirable native species.

7.3.1 Regulatory and Permitting

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

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

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

Section 401 of the CWA gives the State of Maine the authority to regulate federally-permitted activities that may result 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. The MDEP is responsible for issuing Section 401 Water Quality Certification in Maine.

Water resources are further protected under the Natural Resources Protection Act (NRPA) and Mandatory Shoreland Zoning Act (MSZA) in Maine. The NRPA (38 MRSA §§480A-Z) regulates activities within coastal sand dune systems, coastal wetlands, Significant Wildlife Habitat (SWH), fragile mountain areas, freshwater wetlands, great ponds and rivers, streams or brooks. In 2006 Maine passed legislation under the NRPA to regulate Significant Vernal Pools (SVPs) as Significant Wildlife Habitat (SWH). The pool depression and a 250 foot circular zone of consultation are regulated for SVPs by MDEP under the NRPA. Activities regulated under the NRPA include disturbing soil, placing fill, dredging, removing, or displacing soil, sand, or vegetation, draining or dewatering, and building permanent structures, in, on, over, or adjacent to these areas. The MDEP is responsible for enforcement of NRPA. Enforcement actions can consist of voluntary site restoration, filing for an after the fact permit, monetary penalties, consent agreements, or court action.

The MSZA (38 MRSA §§435 to 449) requires municipalities to establish land use regulations for all areas within the shoreland zone that are consistent with or no less restrictive than the DEP's State of Maine Guidelines for Municipal Shoreland Zoning Ordinances (http://www.maine.gov/dep/land/slz/#rule). Shoreland areas are protected under the City of Bangor ordinance for shoreland zoning (Part II, Article VII §165.34-57). The City of Bangor defines a shoreland area as those areas within 250 feet of the normal high-water mark of the Kenduskeag Stream and the Penobscot River or upland edge of a freshwater wetland, and within 75 feet, horizontal distance, of the high-water line of a stream or outlet stream. Shoreland zoning regulations and requirements for the City of Bangor are set forth in Part II, Article VII §165.34-57 of the General Code of Ordinances (http://ecode360.com/). The regulations include land use standards; requirements for the construction of roads, parking lots, bridges and other structures; and restrictions on vegetation clearance in these areas.

Floodplains are protected under the NRPA, the MSZA, and the City of Bangor ordinance for floodplain management (General Code Part II, Chapter 120), which regulates development within FEMA-designated floodplains, and EO 11988 (Floodplain Management). The purpose of EO 11988 is to reduce the risk of flood loss, minimize the impacts of flooding, and restore and preserve the natural and beneficial values of floodplains when acquiring, managing or disposing of federal lands.

Through the Coastal Zone Management Act of 1972, the Maine Coastal Program (MCP) has the authority to review and, if necessary, veto federal actions affecting Maine's coastal resources. The MCP was established in 1978 and is administered by the MDOC's Bureau of Geology, Natural Areas, and Coastal Resources as a partnership of state, regional and location agencies. In Maine, standards and criteria of state environmental permitting, and licensing laws and regulations serve as the enforceable policies of the MCP. Bangor ANGB is located within the coastal zone management area of Maine's Atlantic coastline, and is subject to coastal zone management regulations.

Permitting

Permitting requirements vary depending on type, location, and extent of disturbance. Prior to initiating projects or activities (e.g. dredging, filling, work in and around a stream) occurring within or with the potential to affect a floodplain, wetland or other water body, the appropriate agencies (e.g. USACE, MDEP, or City of Bangor) should be consulted to determine permitting requirements.

As discussed above, the USACE and MDEP have regulatory authority over Waters of the US under Sections 404 and 401 of the CWA. In Maine, the USACE issues Individual permits and a General Permit that covers many routine or minor projects that result in placement of fill material; dredging or removal of soil or minerals; construction, operation or maintenance of any use or development; and discharge of stormwater into a wetland. All Nationwide Permits (NWPs) have been suspended in New England and replaced with General Permits. The MDEP issues the 401 Water Quality Certification (WQC) for federally permitted activities; they also issue the state NRPA permit. Where possible, the MDEP has combined the decision concerning WQC with the review of an application for a state permit that already requires compliance with state water quality standards. For example, if a 401 WQC and NRPA permit is required for a project both of these approvals are issued at the same time.

An NRPA permit is required from MDEP when an activity will be: (1) located in, on, or over any protected natural resource as defined in the NRPA, or (2) located within 75 feet, measured horizontally, of the normal high-water line of a great pond, river, stream, or brook or the upland edge of a coastal wetland or freshwater wetland. An activity under the NRPA includes: (A) dredging, bulldozing, removing or displacing soil, sand, vegetation or other materials; (B) draining or otherwise dewatering; (C) filling, including adding sand or other material to a sand dune; or, (D) any construction, repair or alteration of any permanent structure. A Permit-by-Rule NRPA permit is issued for those projects meeting the standards set forth under 38 MRSA §§305. For more significant projects, an individual NRPA permit is issued by the MDEP.

Furthermore, any development within a special flood hazard area or shoreland zone, including construction, fill or other alterations, will require a flood hazard development permit or shoreland zoning permit, respectively, from the City of Bangor.

In compliance with the provisions of the Federal Water Pollution Control Act as amended (33 USC 1251) and the Maine Protection and Improvement of Waters Act (38 MRSA § 411-424), the MDEP issues general permits for the application of aquatic pesticides for control of mosquito-borne diseases, herbicides for the control of invasive aquatic plants, and other pesticides for the control of invasive fishes through its National Pollutant Discharge Elimination System (NPDES) Program. These NPDES General Permits are consistent with the USEPA pesticide general permit requirements, which are published under 40 CFR 122.

7.3.2 Coastal Management Zones

Maine's federally approved coastal zone extends from the inland boundary of all 147 coastal towns, including Bangor, that contain tidal waters to the outer limit of the State’s territorial jurisdiction (i.e. 3 nautical miles). All federally owned property is excluded from the coastal zone. However, federal actions on these properties that have reasonably foreseeable effects on any land or water use or natural resource in Maine's coastal zone are still subject to a federal consistency review (MCP 2017). Federal actions that are subject to federal consistency reviews include

activities conducted or supported by a federal agency, requiring a federal license or permit, and subject to federal assistance.

Bangor ANGB is located within the coastal zone management area and comprised of both federally owned property and land leased through the City of Bangor. The installation is adjacent to the Penobscot River, which flows into Penobscot Bay approximately 30 miles southeast of Bangor. As such, activities at Bangor ANGB with the potential to affect the coastal zone are required to undergo a federal consistency review. The MDOC's Bureau of Geology, Natural Areas, and Coastal Resources coordinates and provides a point of contact for federal consistency review in Maine. The Maine Guide of Federal Consistency Review (MCP 2017) lists the enforceable policies of the MCP and outlines the federal consistency review process.

If MDOC's Bureau of Geology, Natural Areas, and Coastal Resources issue an Objection to the Consistency Certification, then the federal agency cannot implement the action or issue the required federal permit or license. In its objection, they may provide a description of alternatives to consider, if any exist, that would make the proposed activity consistent with the MCP if adopted by the applicant.

7.3.3 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 occur during rain events.

As defined by MDEP and the City of Bangor and in accordance with the MSZA, there are restrictions on vegetation removal within shoreland zones. A shoreland zone includes the area within 250 feet of the normal high-water mark (horizontal distance) of a greater pond or river (e.g. Kenduskeag Stream and Penobscot River) or upland edge of a freshwater wetland, and within 75 feet (horizontal distance) of the high-water line of a stream or outlet stream. For airfield management to reduce BASH risk, water resources in the airfield and its critical zone do not have vegetated buffers, although there may be turf grass around some features.

7.4 Grounds Maintenance

Given large parts of Bangor ANGB and SPANGS are landscaped, the management and design of those areas have significant implications for water quality, BASH risk, and native species. The following recommended landscaping practices should benefit the environment and generate long-term savings in cost and maintenance time. In particular, the use of native plants not only protects biodiversity and provides wildlife habitat, but it can also reduce demands for fertilizer, pesticides, irrigation, and their associated costs. General recommendations to promote environmentally beneficial landscaping include:

- Design landscaping using native plants to be suitable to the specific site and appropriate for the use and operation of the facility.

- Where feasible, use plant species that support pollinators (see **Section 7.2.1** and Air Force Pollinator Conservation Reference Guide for best management practices [BMPs]).
- Implement water-efficient practices, use efficient irrigation systems and recycled water, and use landscaping to conserve energy.
- Limit turf areas where practical to reduce water use and maintenance requirements; replace with low maintenance ground covers or natural meadows.
- Use wood mulch instead of rock mulch when practical.
- Prevent expansion of nonnative plants into native plant areas by using regionally native plants for landscaping where practicable.
- Where feasible reuse landscape trimmings on site as appropriate (e.g. compost, mulch).
- Do not use seed-bearing or fruiting plants that provide food for wildlife and wildlife habitat in areas near airfields.
- Where feasible, include a rain garden in your plan (University of Maine Extension Bulletin #2702 http://extension.umaine.edu/publications/2702e/).
- Where feasible, install rain harvesting/catchment systems at buildings (e.g. gutters and rain barrels, rain gardens) to reduce the need for supplemental landscape irrigation.

In addition to these more general landscaping practices, the use of green infrastructure or low impact development (LID) techniques can reduce the risk of negatively impacting water quality on-site, in Birch Stream, or other downstream water bodies (e.g. Kenduskeag Stream and Penobscot River). The Maine Stormwater Best Management Practices Manual (MDEP 2016b) and LID Guidance Manual for Maine Communities (MCP 2007) provide details on specific BMPs. All invasive plants identified by the Maine Natural Areas Program (MNAP) and noxious weeds listed for Maine are not acceptable for landscaping planting. Suitable native plant species can be found in the University of Maine Extension Bulletin #2500, Gardening to Conserve Maine's Native Landscape: Plants to Use and Plants to Avoid (http://extension.umaine.edu/publications/2500e/.)

To facilitate these practices, MEANG will help develop a landscaping plan to identify areas suitable for green infrastructure, conversion of turf grass to other forms of landscaping, and to reduce mowing areas (**Table 10**). As that effort moves forward, there are also opportunities for benefiting wildlife and water quality without increasing BASH risk.

7.5 Forest Management

Although the area is limited, Bangor ANGB has intact regrowth forest with diverse tree species which provide potential habitat for many plant and wildlife species. In addition, much of the area to the north and west of Bangor ANGB consists of forests and wetlands. Should endangered bat species (e.g. northern long-eared bat) be found on the Installation during the upcoming bat surveys (Table 7), any tree removal on the Installation will include coordination with appropriate agencies and follow applicable BMPs.

A significant management concern for forests in Maine is invasive plant species. A number of invasive species can impact the forest understory and wetlands, resulting in adverse effects on rare and native species. Forest pests and diseases, some of which are native to the area, can also cause significant management issues. Currently, there are no known forest pests or diseases present on Bangor ANGB. Forest pests and diseases in the Bangor area include gypsy moths

(*Lymantria dispar dispar*), browntail moth (*Euproctis chrysorrhoea*), and beech bark disease. Hemlock wooly adelgid (*Adelges tsugae*), emerald ash borer (*Agrilus planipennis*) and Asian longhorn beetles (*Anoplophora glabripennis*), although not currently in the vicinity of Bangor ANGB, these species are expected to extend their range. Bangor ANGB can consult MDOC's Maine Forest Service (MFS) foresters or other certified foresters/arborists if forests require treatment or preventive measures. One of the primary means by which MFS is preventing new outbreaks is a statewide ban on importing firewood from out of state and an educational program to reduce the movement of firewood in general. Management strategies for invasive species are presented in **Section 7.9.2**.

7.6 Soil Conservation and Sediment Management

Two main types of soil erosion exist: wind erosion and water erosion. Neither wind nor water erosion are a significant issue currently at Bangor ANGB. Several factors affect water erosion including rainfall, slope steepness and length, soil texture or erodibility, cover protecting the soil, and special practices such as terracing or planting on the contour. Any change in vegetation cover or land management that increases the risk of water erosion could impact water quality in Birch Stream and ultimately other water bodies downstream.

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. Additionally, stormwater runoff from impervious surfaces has a high potential to carry pollutants into wetlands, surface waters, and groundwater. Sources of stormwater runoff and pollution could originate from operational, maintenance, and/or administrative areas within Bangor ANGB. Impervious surfaces at Bangor ANGB include roads, parking lots, taxiways, sidewalks, and buildings. However, Bangor ANGB has a number of stormwater controls already in place, which greatly reduce runoff and increase infiltration through a controlled environment before the stormwater enters either surface or groundwater.

As required by the NPDES permit and specified in the SWPPP (MEANG 2017b), quarterly visual monitoring is performed on 4 outfalls along with an overall visual inspection of Bangor ANGB. Erosion prone areas and areas under construction are inspected regularly using the same visual inspection protocol. In addition, while analytical monitoring is not required by the NPDES permit, it is voluntarily conducted at 4 locations along the path where stormwater flows from Bangor ANGB into Birch Stream. To protect water quality, the MEANG already implements the following strategies:

- Maintain shoreland zones around water resources, especially streams and wetlands as required by the applicable Maine statutes, rules, laws, and other enforceable policies.
- Adhere to BMPs for construction and industrial activities as described in applicable manuals, plans, and permits.
- Monitor roads for signs of erosion and repair as needed.
- Restrict off-road vehicle use.
- Minimize the amount of impervious surfaces in newly developed areas.
- Minimize the use of pesticides.
- Revegetate barren ground.
- Monitor surface water quality.

- Prevent surface water pollution by ensuring environmental plans (e.g. SWPPP and MS4) are implemented (e.g. capture and treatment of deicing fluid runoff)

7.7 Outdoor Recreation, Public Access, and Public Outreach

Due to security and/or safety measures, there is currently no unsupervised public access or individual public access programs for outdoor recreation or otherwise at Bangor ANGB. However, Bangor ANGB hosts both a STARBASE and a Civil Air Patrol program, and participates in city-wide events with the Bangor Area Storm Water Group (BASWG). Other outreach activities occur sporadically, including visits from school groups.

The STARBASE and Civil Air Patrol program are more related to the military mission, than environmental issues. STARBASE is a DoD youth program designed to raise the interest and improve the knowledge and skills of at-risk youth about science, technology, engineering and math through a hands-on program at military installations throughout the US. The Civil Air Patrol is a non-profit organization that serves as the official civilian auxiliary of the USAF, composed of volunteers interested in aviation. The BASWG focuses on stormwater and water quality issues in and around Bangor and is a collaboration of regulated entities working jointly to support individual Municipal Separate Storm Sewer System (MS4) permit compliance with six minimum control measures: education and outreach, public involvement, illicit discharge detection and elimination, construction, post construction, and good housekeeping/pollution prevention. Bangor ANGB also participates in an annual street and stream clean up, hazardous waste event, local science fair, and a rain barrel/rain garden installation. Additionally, the base takes part in the Northern Maine Children's Water Festival, which has an attendance of nearly 700 fourth, fifth, and sixth-grade students from northern and central Maine. The festival is a cooperative effort that engages students in learning about various water resources throughout the state.

7.8 Geographic Information Systems (GIS)

GIS is used to manage and catalog information acquired in natural resources research. GIS assists in planning by charting areas of environmental concern and providing a baseline for analyzing the potential impacts of any proposed natural resources management action. Managers can implement the capabilities of a GIS to watershed, wetlands, wildlife, and various other natural resource management applications. GIS needs and requirements will be addressed through the ANG GeoBase Program.

7.9 Other Plans

7.9.1 Integrated Pest Management Plan

Bangor ANGB has an IPM Program implemented by the MEANG (MEANG 2015). IPM is the use of multiple techniques in a compatible manner to avoid damage and minimize adverse environmental affects while obtaining control of target pests. The goal of IPM is to utilize non-chemical procedures to control pests, including invasive, exotic plant and animal species to the greatest extent practicable. Typically, a combination of the following IPM techniques is required to resolve a problem on a sustained basis:

- Mechanical control, which alters environments in which pests live, traps or removes pests (e.g. glue boards and live-traps) from where they are not wanted, or excludes pests from where they are not wanted (e.g. screening, fencing).

- Cultural control, which manipulates environmental conditions to suppress or eliminate pests (e.g. removal of food scraps or 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 IPM techniques safely. It is the policy of the MEANG to minimize the use of all pesticides at the Installation. Future IPM projects may include a study to establish the presence and extent of bed bugs on Bangor ANGB.

7.9.2 Invasive Species

No single comprehensive list of all invasive species or their priority to be managed exists for Maine. Maine Department of Agriculture (MDA), MDEP, MNAP, and MFS all maintain different lists for different purposes, with some overlap of species. The various sources of information on invasive species in Maine include:

- MDA Invasive Pests: http://www.maine.gov/dacf/php/gotpests/invasive-pests.htm
- MDEP's Advisory List of Invasive Aquatic Species: http://www.maine.gov/dep/water/invasives/invadvisorylist.pdf
- MNAP's Invasive Plant Fact Sheets: http://www.maine.gov/dacf/mnap/features/invasive_plants/invsheets.htm
- MFS Invasive Threats to Maine's Forests and Trees: http://www.maine.gov/dacf/mfs/forest_health/invasive_threats/index.htm
- University of Maine's Invasive Species Network: http://umaine.edu/invasivespecies/
- Invasive Plant Atlas of New England (IPANE): http://www.eddmaps.org/ipane/
- US Department of Agriculture (USDA)'s Introduced, Invasive and Noxious Plants: http://plants.usda.gov/java/noxious?rptType=State&statefips=23

Table 6 describes priority invasive species for Bangor ANGB (ANG 2015). Priority invasive species were determined based on likely control of the species and the current or potential impacts to native plants and wildlife. A species was identified as high priority if control (or even eradication on site) is feasible and the impacts from the species are currently or have potential to be significant. In other words, treatment should occur as soon as possible. A species was identified as a low priority species if it would be very difficult to achieve control of the species and the current or potential impacts are relatively low. The species should be monitored occasionally but no treatment is recommended at this time. A species identified as a medium priority species would be either feasible to control or have significant impacts (but not both). Treatment should occur when an opportunity arises, such as in conjunction with another project or as part of a larger event, and the populations should be monitored for expansion (ANG 2015).

Table 6. Priority Invasive Plant Species on Bangor ANGB

Scientific Name	Common Name	Priority	MNAP Category
Artemisia vulgaris	common mugwort	Low	Potential
*Berberis vulgaris**	common barberry	Low	Potential
*Lonicera morrowii**	Morrow's honeysuckle	Low	Known

*Lythrum salicaria**	purple loosestrife	Low, with potential to spread	Known
*Phalaris arundinacea**	reed canary grass	High	-
Phragmites australis	common reed	Low, with potential to spread	Known
*Polygonum cuspidatum**	Japanese knotweed	Low, with potential to spread	Known
*Rhamnus cathartica**	common buckthorn	Medium	Known
Rosa multiflora	multiflora rose	Medium	Known
Verbascum thapsus	common mullein	Low	-
Vicia cracca	bird vetch	Low	-

Sources: MDEP 2002; MNAP 2013; ANG 2015
MNAP Category:
Known = known invasive plant in Maine;
Potential = potential or probably invasive in Maine
* indicates species previously documented on Bangor ANGB (ANG 2015).

Management Strategies

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

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

- Implement BMPs to minimize land disturbances that favor invasion of non-native species and re-vegetate disturbed areas with native species.
- Use native rock and soil material instead of non-indigenous rock or soil when practical for maintenance or construction projects.
- Utilize mulches from Bangor ANGB or certified weed-free sources to facilitate the establishment of native ground cover on impoverished soils.
- Maintain biodiversity and undisturbed habitat to maximize resilience to and competition with invasive species.
- Control invasive and exotic species, and noxious weeds through early detection, isolation of infested areas, and control of individual plants with physical, chemical, or mechanical means, depending on the species.
- Favor basal application and spot treatment, and avoid aerial or broadcast application, of pesticides to prevent adverse impacts to native plants and wildlife.
- Avoid pesticide use in and around wetlands and other surface waters. Do not use invasive, non-native species in landscaping.
- Continue to reseed exposed soils using a certified weed-free native grass mix.
- Educate site users.

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

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

7.9.3 Stormwater Management

Stormwater management is important at Bangor ANGB given the extent of development and nearness to Birch Stream, a tributary of the Kenduskeag Stream and Penobscot River, and the potentially significant effects of erosion and non-point source pollution (e.g. deicing fluid) on water quality. The Maine Erosion and Sediment Control BMPs (MDEP 2016a) are the primary source for erosion and sediment control standards. The Maine Stormwater Best Management Practices Manual (MDEP 2016b) is the primary source for pollution and non-sediment water quality standards and BMPS, including LID techniques and rain gardens. Details on implementing LID techniques on smaller sites are also provided in the LID Guidance Manual for Maine Communities (MCP 2007).

The MEANG maintains a SWPPP for prevention and management of stormwater on Bangor ANGB (MEANG 2017b). In addition to complying with the SWPPP's requirements, construction or other land-disturbing activity that creates a minimum of 1-acre of soil disturbance must be permitted by the MDEP under the NPDES permit program. The NPDES permit establishes the required erosion control and revegetation standards. The MEANG also maintains a MS4 permit that authorizes the direct discharge of stormwater (MDEP 2013). Compliance with the MS4 permit includes the adherence to six control measures: education and outreach, public involvement, illicit discharge detection and elimination, construction, post construction, and good housekeeping/pollution prevention. The base continues to raise awareness through outreach activities and public involvement and positively affects construction and post-construction activities with BMPs and proper redevelopment.

MEANG Stormwater Outfall

7.9.4 Bird/Wildlife Aircraft Strike Hazard (BASH)

As users of the BGR runways, the MEANG implements a BASH Plan (MEANG 2017a) and will support implementation of BGR's WHMP (BGR 2015). The BASH Plan establishes specific procedures intended to reduce known and future hazards from birds, including the development of a BHWG. The BHWG is chaired by the Vice Wing Commander. The Flight Safety Officer is responsible for developing, implementing, and updating the BASH Plan and reviewing BASH incidents. At Bangor ANGB, BASH projects and activities are led by the Safety Office, implemented by USDA-WS, and are in coordination with the Environmental Office.

In general, the highest risk for bird strikes at Bangor ANGB occurs in the spring and fall during migration season. Bangor ANGB is diligent about reporting all wildlife strikes and over the years there has been a notable shift from large birds to smaller birds. This indicates the BASH program

is reducing damaging and catastrophic incidents (MEANG 2017a). The area surrounding Bangor ANGB contains numerous features that are inherently attractive to a variety of birds and other wildlife that are potentially hazards for flying operations (MEANG 2017a). Extensive wetlands and water features surround BGR, including numerous small lakes and ponds, which harbor waterfowl and other water birds. Ducks, gulls, blackbirds, starlings, and small mammals were noted to occupy these water and wetland features. Concentrations of ducks and gulls were specifically noted along Kenduskeag Stream on aerial observations (MEANG 2017a).

In particular, birds can be encountered at altitudes of 30,000 feet and higher. However, most birds fly closer to ground level, and more than 95% of all reported incidents in which a USAF aircraft has struck a bird have been at an altitude below 3,000 feet. Approximately half of these bird strikes occur in an airfield environment. Strike rates rise significantly as altitude decreases, which is partly due to the greater number of low-altitude missions, but mostly because birds are commonly active nearer to the ground. Any gain in altitude represents a substantially reduced threat of a bird-aircraft strike.

Wildlife management and control measures include a number of dispersal methods available to MEANG and airport personnel on an as-needed basis. Active harassment activities include a combination of frightening devices that are used whenever birds are present on the airfield or in the surrounding area. In addition to active harassment, BASH management techniques include rodent control and depredation. Management of habitat, however, is the most effective and cost-efficient form of minimizing BASH risk. If the airfield itself is less attractive than its surroundings, birds and other wildlife will preferentially use other areas.

The potential exists for future bird strikes at Bangor ANGB, but there are many management strategies and protocols being implemented both by MEANG and BGR to reduce this risk. These strategies include:

- Maintaining uniform grass height between 7-14 inches on the airfield.
- Removing or repairing old operating surfaces and broken tarmac, etc., from the airfield.
- Removing all trees in the airfield operating area.
- Avoiding landscaping that would attract wildlife on the airfield.
- Maintaining fencing to recommended standards.
- Using anti-perching devices where appropriate.
- Eliminating roosting areas.
- Maintaining rapid transition from airfield to forested areas to limit edge effect.
- Bird-proofing buildings and other structures.
- Prohibiting feeding or attracting birds or wildlife.
- Remove dead birds or other animals from the field to avoid attracting vultures or other birds.

7.9.5 Bangor International Airport's Wildlife Hazard Management Plan

BGR's WHMP establishes the responsibilities, policies, resources, and procedures that will reduce the airport's wildlife hazards. This plan includes discussions on management actions, control measures, laws and regulations, resources, and training (BGR 2015).

7.9.6 City of Bangor Comprehensive Plan

The City of Bangor has a Comprehensive Plan (City of Bangor 2012), which provides a framework for long-range land use planning in the region around Bangor ANGB. The purpose of the City of Bangor Comprehensive Plan is to translate community values and goals into a framework for decisions on growth, land use, public facilities, and services. The document contains both a long-range vision of how citizens want their community to look and function in the future as well as Goals, Objectives, Land Use Concepts, and Zoning Policy Maps for achieving this vision. Based on the summary provided in the Comprehensive Plan, the areas around Bangor ANGB are considered either airport or institutional areas.

7.9.7 Maine's State Wildlife Action Plan

During the INRMP development process, the MEANG consulted Maine's SWAP (MDIFW 2015) to ensure INRMP goals, objectives and strategies are consistent with Maine's overall statewide and habitat-specific plans. The purpose of Maine's SWAP is to provide a foundation for the future of wildlife conservation and serve as a stimulus to engage the state and federal agencies, and other conservation partners to strategically think about their individual and coordinated roles in prioritizing conservation efforts.

7.9.8 Birch Stream Watershed Management Plan

During the original INRMP development process, the MEANG consulted the Birch Stream WMP (City of Bangor 2010) to ensure INRMP goals, objectives and strategies are consistent with the goals and objectives identified in the Birch Stream WMP. The Birch Stream WMP creates a framework for identifying and prioritizing remedial actions (i.e. BMPs) intended to reduce the quantity of runoff that contributes pollutants and uncontrolled flow from developed areas, and follows the federal guidance for watershed management plans published by the USEPA.

8.0 MANAGEMENT GOALS AND OBJECTIVES

Goals and objectives provide the framework for natural resources management programs. Goals provide a general guiding direction for each technical area and objectives are more specific actions that facilitate achieving those goals. The objectives then drive the development of specific activities and projects to achieve those objectives. Management goals and objectives for the MEANG INRMP were developed through a thorough evaluation of the natural resources present on Bangor ANGB 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 MEANG INRMP is implemented.

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

OBJECTIVE PM1: Coordinate an annual review of the MEANG INRMP with internal stakeholders, the USFWS, and MDIFW and monitor the progress of goals and objectives. Update and document the INRMP accordingly.

OBJECTIVE PM2: Use adaptive, ecosystem management as the primary natural resources management paradigm. Ensure the INRMP is integrated with other plans such as the IPM Plan and BASH Plan.

OBJECTIVE PM3: Continue public outreach and develop educational materials that focus on ecosystem and natural resources management to increase awareness and potentially minimize impacts.

OBJECTIVE PM4: Continue to cooperate with other agencies and local landowners on regional land and natural resource management.

OBJECTIVE PM5: Ensure the annual budget is prepared and implement for the fiscal year's activities.

GOAL – Fish and Wildlife Monitoring (FW): Establish a monitoring program for wildlife where trends, habitats, and ecological data can be tracked and analyzed.

OBJECTIVE FW1: Perform a biological survey (including biological assessments) every 3 to 5 years as a means to monitor and track significant wildlife populations.

OBJECTIVE FW2: Maintain a wildlife inventory or database and establish a GIS layer. Update and incorporate data into annual INRMP reviews.

OBJECTIVE FW3: Observe the interaction of species within the existing ecosystem as it pertains to the military mission. Specific surveys to monitor are: avian (for BASH), bat species, and any invasive/non-native wildlife.

OBJECTIVE FW4: Minimize BASH risk and mortality by deterring hazardous birds and other wildlife from the airfield and its critical zone.

a. Conduct an avian survey to determine migratory bird population. Analyze the potential effect to flying operations including nesting locations and areas of significance and concentration.

b. Incorporate proper land management and landscape management plans to promote suitable turf/forested/vegetative areas for nesting birds outside of flying and high-traffic zones.

GOAL – Vegetative Monitoring (VE): Establish a monitoring program for vegetation including the presence and density of invasive species where trends, habitats, and ecological data can be tracked and analyzed.

OBJECTIVE VE1: Maintain/update a vegetative survey every 3 to 5 years as a means to monitor and track significant vegetative populations.

a. Integrate adaptive management project/program design and monitoring to test theories in order to adapt.

OBJECTIVE VE2: Maintain a vegetative inventory or database and establish a GIS layer. Update and incorporate data into annual INRMP reviews.

GOAL – Invasive Species (IN): Conduct invasive and nonnative species control to mitigate pests. Implement an invasive and nonnative species survey and plan.

OBJECTIVE IN1: Manage invasive species by maintaining native vegetation. Monitor the density and spread of invasive species.

a. Monitor forested areas for any signs of disease or infestation and contact a certified forester and/or arborist if needed.

OBJECTIVE IN2: Coordinate implementation of pest management projects with the Installation's Pest Management Coordinator (IPMC).

a. Monitor pest populations to ensure the effectiveness of the IPM Plan and recommend changes to the Plan to the IPMC.

GOAL – Threatened and Endangered Species (TE): Identify the presence of federally and state-threatened and endangered species to include any Species of Greatest Conservation Need (SGCN) with Maine's Wildlife Action Plan.

OBJECTIVE TE1: Conduct a survey for the presence or potential presence of any federally threatened or endangered species (Endangered: Atlantic Salmon; Threatened: Northern Long-Eared Bat). Surveys should include state special status species (Peregrine Falcon; Threatened: Upland Sandpiper, Orono Sedge).

a. Identify the location(s) of wildlife and vegetative areas to any of the aforementioned species.
b. Determine the management criteria for any species identified on base or within the limits of BGR.

OBJECTIVE TE2: Maintain T&E inventory or database and establish a GIS layer. Update and incorporate data into annual INRMP reviews.

OBJECTIVE TE3: Maintain wooded riparian areas where feasible as a means to protect ecosystems.

GOAL – Grounds Maintenance and Landscaping (GM): Manage vegetative cover, forested areas, and soil to minimize sediment loss and erosion, while protecting water quality.

OBJECTIVE GM1: Develop a revegetation plan that promotes soil stabilization and vegetative cover to aid in recovery from projects or disturbances.

OBJECTIVE GM2: Use appropriate native seed mixtures and flora on new landscaping projects and disturbed areas.

a. Maintain uniform coverage and utilize low maintenance grasses in open areas and areas located near the airfield.
b. Where feasible, use plant species that support pollinators

OBJECTIVE GM3: Manage urban trees to meet aesthetics, recreation, and wildlife goals within the Installation's boundary.

a. Conduct an urban tree survey that focuses on health, viability, and survivability, tracking the process through GIS mapping.

OBJECTIVE GM4: Maintain existing stormwater controls and manage stormwater runoff in order to reduce erosion and prevent sediments from entering Birch Stream.

a. Minimize sediment loss during snowmelt by ensuring proper road management is implemented and vehicles remain on roads.

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

OBJECTIVE WA1: Implement the SWPPP and manage stormwater runoff to reduce nutrients and contaminants from entering Birch Stream.

OBJECTIVE WA2: Minimize nonpoint source pollution through implementation of BMPs, following existing spill prevention and hazardous materials management protocols, and education.

a. Utilize data from characterization survey to determine the existence of (if any) point and nonpoint degradation sources.

OBJECTIVE WA3: Implement BMPs to reduce/prevent soil erosion damage from ground disturbing activities.

GOAL – Waters of the US/Wetland Management and Protection (WT): Conduct surveys and jurisdictional determinations (i.e. delineations) for wetlands to minimize potential impacts and encroachments.

OBJECTIVE WT1: Develop a Waters of the US, including wetlands, inventory and conduct jurisdictional determinations to include GIS mapping.

a. Semi-annually inspect Waters of the US/wetlands and riparian areas for disturbance activities and/or physical changes.

OBJECTIVE WT2: Protect or develop wetlands (e.g. establish/repair buffers, post signage) within the riparian areas where feasible and does not impact the mission.

a. Maintain native habitats within riparian areas and minimize excessive human disturbances.

b. Maintain or enhance vegetative buffers within a minimum of 75 feet (horizontal distance) of the high-water line of a stream or outlet stream, and 250 feet from the upland edge of a freshwater wetland.

OBJECTIVE WT3: Educate Installation personnel on the location of waters and wetlands on the Installation and the regulations that pertain to them (e.g. construction activities, human disturbances).

a. Monitor construction projects and other land disturbing activities

b. If encroachments or disturbances are unavoidable, obtain the proper permits from the MDEP and/or USACE.

OBJECTIVE WT4: Establish a characterization of water resources that includes the interaction of hydrology, soils, and vegetation (e.g. wetland, significant vernal pools, stormwater drainage).

9.0 ANNUAL WORK PLANS

The INRMP Annual Work Plans contain projects listed by fiscal year (FY). For each project, a specific timeframe for implementation is provided (as applicable), as well as the office of primary responsibility (OPR), funding source, and priority for implementation (**Tables 7-10**). Priorities are defined as follows:

- High: The INRMP signatories assert that if the project is not funded the INRMP is not being implemented and the Air Force is non-compliant with the Sikes Act; or that it is specifically tied to an INRMP goal and objective and is part of a "Benefit of the Species" determination necessary for ESA Sec 4(a)(3)(B)(i) critical habitat exemption.
- Medium: Project supports a specific INRMP goal and objective, and is deemed by INRMP signatories to be important for preventing non-compliance with a specific requirement within a natural resources law or by EO 13112 on Invasive Species. However, the INRMP signatories would not contend that the INRMP is not be implemented if not accomplished within programmed year due to other priorities and/or funding shortfalls.
- 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 2019			
Project	**OPR**	**Funding Source**	**Priority Level**
Prepare budget to implement the natural resources management program			**High**
Complete annual review of INRMP with USFWS and MDIFW			**High**
Monitor for presence of bat species, especially listed species, using acoustic monitoring or other methods as recommended by the MDIFW or USFWS			**High**
Provide environmental and natural resources training to MEANG personnel, including the CECOS Natural Resources course for 101 CES/CEV and natural resources protection training for non-environmental personnel			High
Continue public outreach and environmental awareness and coordinate with local organizations, as appropriate			High
Evaluate effectiveness of erosion and sediment control measures			High
Monitor at-risk construction sites to ensure erosion and sediment control measures are effective			High
101 CES/CEV will review activities for potential to impact water resources and associated shoreland zones			High
Continue implementing SWPPP and BMPs to maintain water quality			High
Continue maintaining unpaved roads to minimize sediment loss and erosion			High
If an activity will impact a wetland, water resource, or the associated shoreland zone, coordination with USACE/MDEP/City of Bangor will be completed and mitigation options identified			High
Monitor regulated riparian and wetland buffers, and compile information into a GIS database			High
Monitor condition of wetlands			High
Support BASH Office, as needed			High
When new activities are undertaken at MEANG, a review for impacts to listed species and their habitat should be conducted by 101 CES/CEV and ANG NGB/A4AM to identify and minimize potential impacts			High
Use native plant species and materials for landscaping activities			High
Support IPM Plan, as need			High
Coordinate with MFS or local foresters/arborists to monitor for forests pests			High
Monitor priority invasive species occurrence for changes in density or distribution			High
Monitor regularly for new invasive species or sudden increases in density of existing invasive species			High
Conduct any tree management or removal to minimize impacts to migratory birds by avoiding projects between April and October			High
Incorporate new GIS data from ANG and contractors into the master GIS database			High
Implement control projects for invasive species, possibly in conjunction with local government and non-profits			High
Reduce coverage of invasive plants			High
Implement forest management projects necessary to maintain forest health and diverse age structure to support rare species			High
Implement management necessary to control forest pests, in particular non-native pests, and to mitigate damage			Medium

Table 8. Work Plans FY 2020			
Project	**OPR**	**Funding Source**	**Priority Level**
Prepare budget to implement the natural resources management program			**High**
Complete annual review of INRMP with USFWS and MDIFW			**High**
Develop comprehensive vegetation community data (based on MNAP/National Vegetation Classification System [NVCS] classifications), using remote sensing techniques and ground-truthing			**High**
Conduct plant planning level survey including any rare, and federal and state-listed plants			**High**
Conduct an invasive species survey			**High**
Provide environmental and natural resources training to MEANG personnel, including the CECOS Natural Resources course for 101 CES/CEV and natural resources protection training for non-environmental personnel			High
Continue public outreach and environmental awareness and coordinate with local organizations, as appropriate			High
Evaluate effectiveness of erosion and sediment control measures			High
Monitor at-risk construction sites to ensure erosion and sediment control measures are effective			High
101 CES/CEV will review activities for potential to impact water resources and associated shoreland zones			High
Continue implementing SWPPP and BMPs to maintain water quality			High
Continue maintaining unpaved roads to minimize sediment loss and erosion			High
If an activity will impact a wetland, other water resource, or the associated shoreland zone, coordination with USACE/MDEP/City of Bangor will be completed and mitigation options identified			High
Monitor regulated riparian and wetland buffers, and compile information into a GIS database			High
Monitor condition of wetlands			High
Support BASH Office, as needed			High
When new activities are undertaken at MEANG, a review for impacts to listed species and their habitat should be conducted by 101 CES/CEV and ANG NGB/A4AM to identify and minimize potential impacts			High
Use native plant species and materials for landscaping activities			High
Support IPM Plan, as needed			High
Coordinate with MFS or local foresters/arborists to monitor for forests pests			High
Monitor priority invasive species occurrence for changes in density or distribution			High
Monitor regularly for new invasive species or sudden increases in density of existing invasive species			High
Conduct any tree management or removal to minimize impacts to migratory birds by avoiding projects between April and October			High
Incorporate new GIS data from ANG and contractors into the master GIS database			High
Implement control projects for invasive species, possibly in conjunction with local government and non-profits			High
Reduce coverage of invasive plants			High
Implement forest management projects necessary to maintain forest health and diverse age structure to support rare species			High
Implement management necessary to control forest pests, in particular non-native pests, and to mitigate damage			Medium

Table 9. Work Plans FY 2021			
Project	**OPR**	**Funding Source**	**Priority Level**
Prepare budget to implement the natural resources management program			**High**
Complete annual review of INRMP with USFWS and MDIFW			**High**
Conduct wildlife planning level survey(s) with an emphasis on rare, and federal and state-listed species			**High**
Provide environmental and natural resources training to MEANG personnel, including the CECOS Natural Resources course for 101 CES/CEV and natural resources protection training for non-environmental personnel			High
Continue public outreach and environmental awareness and coordinate with local organizations, as appropriate			High
Evaluate effectiveness of erosion and sediment control measures			High
Monitor at-risk construction sites to ensure erosion and sediment control measures are effective			High
101 CES/CEV will review activities for potential to impact water resources and associated shoreland zones			High
Continue implementing SWPPP and BMPs to maintain water quality			High
Continue maintaining unpaved roads to minimize sediment loss and erosion			High
If an activity will impact a wetland, other water resource, or the associated shoreland zone, coordination with USACE/MDEP/City of Bangor will be completed and mitigation options identified			High
Monitor regulated riparian and wetland buffers, and compile information into a GIS database			High
Monitor condition of wetlands			High
Support BASH Office, as needed			High
When new activities are undertaken at MEANG, a review for impacts to listed species and their habitat should be conducted by 101 CES/CEV and ANG NGB/A4AM to identify and minimize potential impacts			High
Use native plant species and materials for landscaping activities			High
Support IPM Plan, as needed			High
Coordinate with MFS or local foresters/arborists to monitor for forests pests			High
Monitor priority invasive species occurrence for changes in density or distribution			High
Monitor regularly for new invasive species or sudden increases in density of existing invasive species			High
Conduct any tree management or removal to minimize impacts to migratory birds by avoiding projects between April and October			High
Incorporate new GIS data from ANG and contractors into the master GIS database			High
Implement control projects for invasive species, possibly in conjunction with local government and non-profits			High
Reduce coverage of invasive plants			High
Implement forest management projects necessary to maintain forest health and diverse age structure to support rare species			High
Implement management necessary to control forest pests, in particular non-native pests, and to mitigate damage			Medium

Table 10. Work Plans FY 2022			
Project	**OPR**	**Funding Source**	**Priority Level**
Prepare budget to implement the natural resources management program			**High**
Complete annual review of INRMP with USFWS and MDIFW			**High**
Assist BCE with developing a landscaping and mowing plan to reduce maintenance and benefit wildlife, as well maintain regulated buffers, and identify opportunities for green infrastructure			**High**
Survey Wetlands and other Waters of the US to update mapping and delineations, as funding is available			**High**
Provide environmental and natural resources training to MEANG personnel, including the CECOS Natural Resources course for 101 CES/CEV and natural resources protection training for non-environmental personnel			High
Continue public outreach and environmental awareness and coordinate with local organizations, as appropriate			High
Evaluate effectiveness of erosion and sediment control measures			High
Monitor at-risk construction sites to ensure erosion and sediment control measures are effective			High
101 CES/CEV will review activities for potential to impact water resources and associated shoreland zones			High
Continue implementing SWPPP and BMPs to maintain water quality			High
Continue maintaining unpaved roads to minimize sediment loss and erosion			High
If an activity will impact a wetland, other water resource, or the associated shoreland zone, coordination with USACE/MDEP/City of Bangor will be completed and mitigation options identified			High
Monitor regulated riparian and wetland buffers, and compile information into a GIS database			High
Monitor condition of wetlands			High
Support BASH Office, as needed			High
When new activities are undertaken at MEANG, a review for impacts to listed species and their habitat should be conducted by 101 CES/CEV and ANG NGB/A4AM to identify and minimize potential impacts			High
Use native plant species and materials for landscaping activities			High
Support IPM Plan, as needed			High
Coordinate with MFS or local foresters/arborists to monitor for forests pests			High
Monitor priority invasive species occurrence for changes in density or distribution			High
Monitor regularly for new invasive species or sudden increases in density of existing invasive species			High
Conduct any tree management or removal to minimize impacts to migratory birds by avoiding projects between April and October			High
Incorporate new GIS data from ANG and contractors into the master GIS database			High
Implement control projects for invasive species, possibly in conjunction with local government and non-profits			High
Reduce coverage of invasive plants			High
Implement forest management projects necessary to maintain forest health and diverse age structure to support rare species			High
Implement management necessary to control forest pests, in particular non-native pests, and to mitigate damage			Medium

10.0 INRMP IMPLEMENTATION, UPDATE, AND REVISION PROCESS

10.1 INRMP Implementation

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

- Actively requests, receives, and uses funds for "must fund" projects and activities as defined by Chapter 4 of AFI 32-7001 (Environmental Quality Programming and Budgeting).
- Executes all "must fund" projects and activities in accordance with specific time frames identified in the INRMP.
- Prepares the INRMP in cooperation with appropriate stakeholders. Notifies stakeholders when a new or revised INRMP will be prepared, and solicits participation and input to the INRMP development and review process.
- Ensures that sufficient numbers of professionally trained natural resources management personnel are available to perform the tasks required by the INRMP.
- Ensures INRMP has been approved in writing by the appropriate representative from each cooperating agency within the past 5 years.
- Reviews the INRMP annually and coordinates annually with cooperating agencies.
- Establish and maintain regular communications with the appropriate federal and state agencies for the region where the Installation is located.
- Documents specific INRMP action accomplishments undertaken each year.
- Ensures INRMP updates and reviews are conducted in cooperation with the USFWS, MDIFW, and National Oceanic and Atmospheric Administration (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 this INRMP. Facility management and other seemingly unrelated issues affect implementation. It is important to the implementation of this INRMP that MEANG personnel take ownership of this 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 Bangor ANGB 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 Bangor 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 MEANG INRMP Implementation Analysis

The MEANG 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

MEANG 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; and,
- Feedback from military trainers, the USFWS, the MDIFW, and others.

Some of these areas may not be looked at every year due to lack of data or pertinent information. The effectiveness of the INRMP as a mission enabling conservation tool will be decided by mutual agreement of the USFWS, the MDIFW, and the MEANG 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 and activities needed because an Installation is currently or will be out of compliance if projects or activities are not implemented in the current program year. Examples include:

- Environmental analyses, monitoring, and studies required to assess and mitigate potential effects of the military mission on conservation resources;

- Planning documents;
- Baseline inventories and surveys of natural 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; and,
- Initial documenting and cataloging of archaeological materials.

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

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

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

- Community outreach activities such as Earth Day 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; and
- 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 for specific projects can be grouped into 3 main categories by source: federal ANG NGB funds, other federal funds, and non-federal funds. When projects identified in the plan are not implemented due to lack of funding, or other compelling circumstances, the Installation will review the goals and objectives of this INRMP to determine whether adjustments are necessary. Some additional 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 Bangor 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).
- MEANG 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 MOUs, Memorandums of Agreement (MOAs), 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, agencies, or conservation and special interest groups to obtain mutual conservation objectives. The DoD agreements applicable to Bangor ANGB include:

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

- MOA (2003) between FAA, USAF, US Army, US EPA, USFWS, and USDA to address aircraft-wildlife strikes.

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

10.1.5 Consultations Requirements

The MEANG has multiple natural resources consultation requirements in addition to the INRMP development and review requirements as identified in the Sikes Act. Federally listed species management requires ESA Section 7 consultation with the USFWS. State-listed species management, as well as game species management, requires consultation with MDIFW. Actions that fall under the jurisdiction of Section 401 of the CWA necessitate permitting from MDEP, while Section 404 actions necessitate permitting from the USACE, New England District.

10.2 Annual INRMP Review and Coordination Requirements

Per DoD policy, the MEANG will review the INRMP annually in cooperation with the USFWS and MDIFW. On an annual basis, the EM will invite the USFWS Regional Office, the USFWS local Field Office, the MDIFW, and ANG NGB/A4AM to attend a meeting or participate in a conference call to review previous year INRMP implementation and discuss implementation of upcoming programs and projects. Invitations will be either by letter or email. Attendance is at the option of those invited, but at minimum the USFWS local Field Office and a representative of MDIFW 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, the MEANG will initiate the updates and after agreement of all parties they will be added to the INRMP. If it is determined that major changes are needed, all parties will provide input and an INRMP revision will be initiated with MEANG 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, the MEANG will specifically:

- Invite feedback from USFWS and MDIFW on the effectiveness of the INRMP;
- Inform USFWS and MDIFW which INRMP projects and activities are required to meet current natural resources compliance needs; and,

- 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 Bangor ANGB. The review will be conducted by the 3 cooperating parties to include the Commander responsible for the INRMP, the Supervisor of the USFWS Maine Field Office, and Commissioner of the MDIFW. While these are the responsible parties, technical representatives generally are the personnel who actually conduct the review.

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

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

If a review of operation and effect concludes that an INRMP must be revised, there is no set time to complete the revision. The existing INRMP remains in effect until the revision is complete and USFWS and MDIFW concurrence on the revised INRMP is received. The MEANG 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 MEANG military mission, USFWS and MDIFW concerns are adequately addressed, and the INRMP meets the intent of the Sikes Act.

11.0 APPENDICES

APPENDIX A. REFERENCES

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

Federal Laws

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Resource Conservation and Recovery Act of 1976 (42 USC §6901 et seq.) – establishes a comprehensive program which manages solid and hazardous waste. Subtitle C, Hazardous

Waste Management, sets up a framework for managing hazardous waste from its initial generation to its final disposal. Waste pesticides and equipment/containers contaminated by pesticides are included under hazardous waste management requirements.

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

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

Federal Regulations

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

40 CFR 6 – USEPA Regulations on Implementation of NEPA Procedures

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

15 CFR 930 – Federal Consistency with Approved Coastal Management Programs

50 CFR 17 – USFWS list of Endangered and Threatened Wildlife

50 CFR 10.13 – List of Migratory Birds

32 CFR 190 – Natural Resources Management Program

Federal Executive Orders

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 Memorandum of Understanding 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 32-7061 – Environmental Impact Analysis Process
AFI 32-7064 – Integrated Natural Resources Management
AFI 32-1053 – Integrated Pest Management Program
AFI 32-7062 – Air Force Comprehensive Planning
AFI 32-7065 – Cultural Resources Management
AFPAM 91-212 – BASH Techniques

Department of Defense Memoranda

Memorandum, Assistant Deputy Under Secretary of Defense (Environment, Safety and Occupational Health), 20 Sept 11, Subject: Interim Policy on Management of White Nose Syndrome in Bats.

Memorandum, Assistant Deputy Under Secretary of Defense (Environment, Safety and Occupational Health), 3 Apr 07, Subject: Guidance to Implement the Memorandum of Understanding to Promote the Conservation of Migratory Birds.

Memorandum, Assistant Deputy Under Secretary of Defense (Environment, Safety and Occupational Health), 14 Aug 06, Subject: Integrated Natural Resource Management Plan (INRMP) Template

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

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

Memorandum, Deputy Under Secretary of Defense (Installations and Environment), 10 Oct 02, Subject: Implementation of Sikes Act Improvement Act: Updated Guidance

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

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

Maine

The MRSA provides rules and regulations related to natural resources and environmental protection. The state laws pertaining to natural resources are listed and described in detail below; however, those that may not be applicable at Bangor ANGB are not described in detailed. The complete MRSA as well as details regarding the provisions within each Chapter can be found at: http://www.mainelegislature.org/legis/statutes/.

State Laws Applicable to Bangor ANGB

Maine Pesticide Control Act of 1975 (7 MRSA §§601-625) – this act establishes rules for the transport and distribution of pesticides within the state. It also establishes enforcement via sampling and examination of pesticides or devices for the purpose of determining whether they comply with the requirement of this act.

Use Regulation (12 MRSA §§681-689) – these statues extend the principles of planning, zoning, and development to the townships of the state, by establishing criteria for classification and districting of lands into 1 of the major district classifications, including protection, management, and development.

Maine Endangered Species Management and Research (12 MRSA §§12801-12810 [inland species]; 12 MRSA §6971-6977 [marine species]) – these statutes afford protection for inland and marine threatened and endangered species. The law specifically states that a state agency or municipal government may not permit, license, fund, or carry out projects that would significantly alter the habitat of any species designated as threatened or endangered by the commissioner.

Maine Board of Pesticides Control Law (22 MRSA 1471-A-X) – this law regulates the sale and application of chemical insecticides, fungicides, herbicides and other chemical pesticides for the purpose of protecting the natural resources of the state.

Prevention of the Spread of Invasive Aquatic Plants (38 MRSA §419-C) – this statute prevents the possession, importation, cultivation, or transportation of any aquatic plant, including roots, rhizomes, stems, leaves, or seeds.

Erosion and Sedimentation Control (38 MRSA §420-C) – this statute applies everywhere in all organized areas of the state, for all sizes of projects. If a person is filling, displacing or exposing soil or other earthen materials, the Erosion Control Law requires that measures to prevent unreasonable erosion of soil or sediment beyond the site or into a protected natural resource, such as a river, stream, brook, lake, pond, or wetland, be implemented. Erosion control measures must be installed before the activity begins, be maintained, kept in place and functional until the site is permanently stabilized.

Storm Water Management (38 MRSA §420-D) – the purpose of this statute was to address the stormwater quantity and quality impacts of development in organized areas of the state. It establishes that any construction project resulting in 1 acre or more of disturbed land requires a permit and approval from the Maine Department of Environmental Protection prior to initiating construction activities.

Mandatory Shoreland Zoning (38 MRSA §§435-449) – this act requires municipalities to adopt land use regulations for all areas within the shoreland zone. The shoreland zone consists of areas within 250 feet of the normal high-water line of great ponds, rivers, and tidal waters; within 250 feet of the upland edge of non-forested freshwater and coastal wetlands; and within 75 feet of certain streams. Distances are measured horizontally. See City of Bangor General Code Ordinance below.

Water Classification Program (38 MRSA §§464-470) – these statutes establish a water quality classification system which allows the state to manage its surface waters so as to protect and enhance the quality of these waters. This classification system is based on water quality standards which designate the uses for each class of water and which also establish water quality criteria necessary to protect those uses.

Natural Resources Protection Act (38 MRSA §§480-A-HH) – the act is focused on "protected natural resources". Protected natural resources are coastal sand dune systems, coastal wetlands, significant wildlife habitat, fragile mountain areas, freshwater wetlands, great ponds and rivers, streams or brooks. A permit is required when an "activity" will be: (1) located in, on or over any protected natural resource, or (2) located adjacent to (A) a coastal wetland, great pond, river, stream or brook or significant wildlife habitat contained within a freshwater wetland or (B) certain freshwater wetlands. An "activity" is (A) dredging, bulldozing, removing or displacing soil, sand, vegetation or other materials; (B) draining or otherwise dewatering; (C) filling, including adding sand or other material to a sand dune; or (D) any construction, repair or alteration of any permanent structure.

Site Location of Development (38 MRSA §§481-490) – these statutes require review of developments that may have a substantial effect upon the environment. These types of development have been identified by the state legislature and include developments such as projects occupying more than 20 acres. A permit is issued if the project meets applicable standards addressing areas such as stormwater management, groundwater protection, infrastructure, wildlife and fisheries, noise, and unusual natural areas. This law applies in organized areas for purposes of all types of development.

Oil Discharge Prevention and Pollution Control (38 MRSA §§541-560) – these statutes require the prompt containment and removal of oil-related contamination. They also establish procedures whereby persons suffering damage, such pollution, may be promptly compensated and establishes a fund to provide for the investigation, mitigation, and removal of oil discharges or threats of oil discharge from storage facilities.

Waste Management (38 MRSA §§1301-1319) – these statutes establish guidance for rules and regulations regarding solid waste, hazardous material, hazardous waste, and waste oil. It also establishes that any person who permits, causes, or is responsible for a prohibited discharge shall reimburse the state, counties, and municipalities for all costs incurred, including personnel costs, in removing the discharge, including costs for ensuring public safety.

Coastal Management Policies Act (38 MRSA §1801) – this act establishes the coastal management policies for Maine related to port and harbor development, marine resource management, shoreland management and access, hazard area development, state and local cooperative management, scenic and natural areas protection, recreation and tourism, water quality and air quality.

State Laws Unlikely to Apply at Bangor ANGB

Maine Rivers (12 MRSA §§401-409) – these statutes require that the State Planning Office, in conjunction with other state agencies, to design a river resource management plan for each

watershed with a hydropower project license or a pending license under the Federal Power Act. These plans must provide a basis for state agency comments, recommendations, and permitting decisions and at a minimum include, as applicable, minimum flows, impoundment level regimes, upstream and downstream fish passage, maintenance of aquatic habitat and habitat productivity, public access and recreational opportunities.

Wind Energy Act (35-A MRSA §§3401-3404) – puts forth specific measures to support wind energy, including a commission responsible for monitoring electricity markets and sale opportunities, initiating regulatory and other legal action to protect access to markets, certifying a community wind power generator.

Surface Water Ambient Toxic Monitoring Program (38 MRSA §420-B) – this statute implements a program designed to comprehensively monitor the lakes, rivers and streams, and marine and estuarine waters of the state on an ongoing basis. The program incorporates testing for suspected toxic contamination in biological tissue and sediment as well as testing of the water column. The program collects data sufficient to support assessment of the risks to human and ecological health posed by the direct and indirect discharge of toxic contaminants.

Permits for Hydropower Projects (38 MRSA §§630 to 636; 640) – these statutes require an individual wishing to initiate construction or reconstruction of a hydropower project, or structurally alter a hydropower project in ways that change water levels or flows, to obtain a single permit from the Department of Environmental Protection. The Act streamlined the previous permitting process by eliminating the need to obtain separate permits under a variety of statutes.

Coastal Barrier Resources System (38 MRSA §§1901 to 1905) – these statutes prohibit the expenditure of statue funds and/or financial assistance for development activities within the coastal barrier resource system, with the exception of the activities listed in §1903.

City of Bangor General Codes of Ordinance

The City of Bangor General Codes of Ordinance provides rules and regulations related to natural resources and environmental protection. The applicable laws pertaining to natural resources are listed and described in detail below. The complete City of Bangor General Codes of Ordinance as well as details regarding the provisions within each Chapter can be found at: http://ecode360.com/BA1684.

Floodplain Management (Part II, Chapter 120 §§120-1-14) – establishes land use and control measures to reduce future flood losses and permitting requirements for development in special flood hazard areas pursuant to National Flood Insurance Program and 30-A MRSA §§3001-3007, §4352 and §§4401-4407.

Hazardous Waste Materials (Part II, Chapter 143 §§143-1-5) – classifies and establishes a permit system for hazardous materials and wastes.

Erosion and Sediment Control (Part II, Chapter 165 §165-33.1) – establishes protocol for the implementation of BMPs during activities that involve filling, displacing, or exposing soil or other earthen materials.

Shoreland Zoning (Part II, Chapter 165 §§165-34-57) – sets forth land use standards and requirements for activities within the shoreland zone. Shoreland areas include those areas within 250 feet of the normal high-water mark of the Kenduskeag Stream and the Penobscot River, or within 75 feet (horizontal distance) of the high-water line of a stream or outlet stream, or 75 feet (horizontal distance) of the upland edge of a freshwater wetland.

Resource Protection District (Part II, Chapter 165 §165-106) – The resource protection district is established to preserve and protect certain areas, such as natural drainage ways, floodplains, streams, rivers, and wetlands. It is intended to preserve and protect open space land, water quality, productive habitat, biotic systems, and scenic and natural areas, but also to protect the inhabitants of the City from costs and consequences which may be incurred when unsuitable development occurs in such areas.

Stream Protection District (Part II, Chapter 165 §165-108) – the Stream Protection District is established to preserve and protect defined streams in the developing areas of the City. The district is intended to ensure that the functions of such natural drainage ways to provide fish and wildlife habitat, to support vegetation, to provide visual relief from development, and to provide passive recreation opportunities are not encroached upon by future development in these development sites.

Solid Waste (Part II, Chapter 265 §§265-1-5) – to promote the public health, safety and welfare; to gain management control over solid waste and enable the reclamation of resources, including energy there from, to provide for the orderly operation of a solid waste disposal facility pursuant to 38 MRSA §1305.