# INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

## FOR
## DEFENSE DISTRIBUTION CENTER SUSQUEHANNA, PENNSYLVANIA

FINAL
OCTOBER 2013
(UPDATED 2016;
LAST REVIEWED 2020)

DEFENSE DISTRIBUTION CENTER, SUSQUEHANNA

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## ANNUAL REVIEW AND COORDINATION PAGE

This page is used to certify the annual review and coordination of the Integrated Natural Resources Management Plan (INRMP) for Defense Distribution Center Susquehanna, Pennsylvania. By their signature, the certifying official acknowledges that the annual review and coordination of the INRMP has occurred for the specified year.

**APPROVING OFFICIALS:**

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**Phil Dawson** Date
DLA Installation Support
Staff Director, Environmental Management

February 16, 2016

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**Lora Zimmerman** Date
U.S. Fish and Wildlife Service-PAFO
Field Office Supervisor

December 21, 2015

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**Christopher A. Urban** Date
Pennsylvania Fish and Boat Commission
Chief, Natural Diversity Section

December 16, 2015

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**Tracey Librandi Mumma** Date
Pennsylvania Game Commission
Chief, Habitat Protection Section

December 16, 2015

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**Greg Podniesinski**
Pennsylvania Department of Conservation and Natural Resources
Section Chief, Natural Heritage Section

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## DEFENSE DISTRIBUTION CENTER SUSQUEHANNA, PENNSYLVANIA

This Integrated Natural Resources Management Plan (INRMP) Update, dated February 2016, has been prepared in accordance with regulations, standards, and procedures of the Department of Defense, the U.S. Army, and the Sikes Act Improvement Amendment of 1997 (16 United States Code [U.S.C.] §670a et seq.) in cooperation with the U.S. Fish and Wildlife Service, the Pennsylvania Fish and Boat Commission, the Pennsylvania Game Commission, and the Pennsylvania Department of Conservation and Natural Resources. The management of fish and wildlife in this INRMP reflects the mutual agreement of all parties.

To the extent that resources permit, the U.S. Fish and Wildlife Service, the Pennsylvania Fish and Boat Commission, and the Pennsylvania Game Commission, and the Pennsylvania Department of Conservation and Natural Resources, by signature of their agency representative, do hereby agree to enter a cooperative agreement program for the conservation, protection, and management of fish and wildlife resources present on the Defense Distribution Center Susquehanna, Pennsylvania. The intention of this agreement is to develop functioning, sustainable ecological communities on these sites that integrate the interests and missions of the agencies charged with conservation, protection, and management of natural resources in the public interest. This agreement may be modified and amended by mutual agreement of the authorized representatives of the three agencies. This agreement will become effective upon the date of the last signatory and shall continue in full force for a period of five years or until terminated by written notice to the other parties, in whole or in part, by any of the parties signing this agreement.

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

**APPROVING OFFICIALS:**

**Phil Dawson** Date
DLA Installation Support
Staff Director, Environmental Management

February 16, 2016

**Lora Zimmerman** Date
U.S. Fish and Wildlife Service-PAFO
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December 21, 2015

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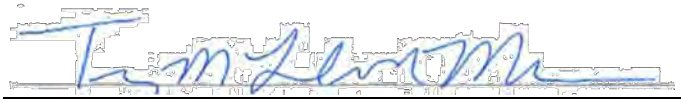

December 16, 2015

**Tracey Librandi Mumma** Date
Pennsylvania Game Commission
Chief, Habitat Protection Section

December 16, 2015

**Greg Podniesinski**
Pennsylvania Department of Conservation and Natural Resources
Section Chief, Natural Heritage Section

This Integrated Natural Resources Management Plan (INRMP) Update has been developed for use by the Defense Distribution Center, Susquehanna in accordance with the Sikes Act Improvement Act (SAIA) (16 United States Code [U.S.C.] §670a et seq.) as amended through 2003; the Department of Defense Instruction 4715.03, *Natural Resources Conservation Program*; and Army Regulation (AR) 200-1, *Environmental Protection and Enhancement*.

In accordance with DOD Instruction 4715.03, the DOD Components review INRMPs annually in cooperation with the other internal and external parties to the INRMP. DOD annually reviews the INRMP goals and objectives, establishes a realistic schedule for undertaking proposed actions, determines adjustments needed to keep INRMPs current, and generates annual assessments of the Natural Resource Conservation Metrics.

In October 2020, this INRMP was reviewed and edited to reflect wetland and stream mitigation projects and related management requirements in accordance with 33 Code of Federal Regulations Part 332.7(a)(3). Coordination with the regulatory agencies was undertaken throughout the planning and implementation of each project. Content highlighted in yellow throughout this document represents new information related to the projects while text removed from the document is shown with double strikethrough lines across the text. Sections highlighted in the Table of Contents signify the updated text. The 5-Year revision of the document will be undertaken in 2021 and will include the results of the 2020 review contained herein.

This INRMP provides a description of the installation and its surrounding environments and presents various management practices designed to mitigate negative impacts and enhance the mission on regional ecosystems. These recommendations are balanced against the requirements of Defense Distribution Center, Susquehanna to accomplish its mission with the highest efficiency.

The guiding principles for this INRMP are as follows:

1. Identify natural resources and operational actions that compromise the function and composition of ecosystems and develop remedies through adaptive management.
2. Sustain and enhance healthy, terrestrial and aquatic habitats on Defense Distribution Center, Susquehanna that provide services and values in an ecosystem.
3. Protect, restore, and enhance wetlands to maintain no net loss of wetland acreage.
4. Assess, sustain, and enhance the health and habitats of fish and wildlife populations in a manner consistent with the military mission and security constraints.
5. Minimize pest-related habitat damage and health risks to natural resources and people.
6. Provide sustainable natural resources-related outdoor recreation opportunities given security constraints.
7. Increase awareness of natural resources issues, programs, and responsibilities for sustaining natural resources among installation employees, residents, and tenants.
8. Integrate the installation natural resources program with local, state, and regional environmental programs and initiatives to the maximum extent possible.

The INRMP presents practicable alternatives and recommendations that can ensure minimal impact on the military mission of Defense Distribution Center, Susquehanna while providing for the management and stewardship of natural resources and the conservation and enhancement of existing ecosystems on the installation. Consequently, in some cases, the implementation of certain recommendations might sacrifice the improvement of installation natural resources in deference to the safety and efficiency of the mission.

Throughout the development of this INRMP, management issues, referred to as "topics of concern," were identified in natural resources subject areas. One of the purposes of this INRMP is to identify goals and objectives for the installation and to obtain workable and useful solutions for each topic of concern. The topics of concern involving natural resources constraints to planning and mission operations are discussed in detail in **Section 5**. The topics of concern are grouped into management sections according to their relevance. **Appendix C** provides a list of projects to be implemented based on the topics of concern discussed in **Section 5**.

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# 1 Introduction

## 1.1 Purpose and Guiding Principles

The purpose of this Integrated Natural Resources Management Plan (INRMP) revision is to integrate natural resources management with the rest of the installation mission. INRMPs are an installation's primary tool for managing natural resources while ensuring success of the military mission, and are a component of the installation Master Plan (DLA 2019). This INRMP presents practicable alternatives and recommendations that allow for the protection and enhancement of natural resources and conservation of existing ecosystems, while minimizing impacts on the installation mission.

The guiding principles for this INRMP are as follows:

1. Identify natural resources and operational actions that compromise the function and composition of ecosystems and develop remedies through adaptive management.
2. Sustain and enhance healthy, terrestrial and aquatic habitats on Defense Distribution Center, Susquehanna that provide services and values in an ecosystem.
3. Protect, restore, and enhance wetlands to maintain no net loss of wetland acreage.
4. Assess, sustain, and enhance the health and habitats of fish and wildlife populations in a manner consistent with the military mission and security constraints.
5. Minimize pest-related habitat damage and health risks to natural resources and people.
6. Provide sustainable natural resources-related outdoor recreation opportunities given security constraints.
7. Increase awareness of natural resources issues, programs, and responsibilities for sustaining natural resources among installation employees, residents, tenants, and visitors.
8. Integrate the natural resources program with local, state, and regional environmental programs and initiatives to the maximum extent possible.

## 1.2 Management Philosophy

As part of its mission, the Defense Logistics Agency (DLA) has chosen to be a national leader in environmental and natural resources stewardship. The vitality of natural resources must be ensured to achieve its military mission. As a steward of natural resources, the DLA acknowledges its commitment to be a conservation leader for its cognizant areas.

Conservation is an integration or blending of natural resources management and preservation designed to maintain ecosystem integrity. This INRMP is structured to accomplish conservation successfully. It is a dynamic document that will be maintained and adapted, as necessary, to reflect updated natural resources information. The development and implementation of this INRMP indicate that senior management at Defense Distribution Center, Susquehanna is committed to natural resources management as reflected in Department of Defense Instruction (DODI) 4715.03, *Natural Resources Conservation Program*.

The INRMP presents practicable alternatives and recommendations that allow for the protection and enhancement of natural resources and conservation of existing ecosystems, while minimizing impacts on the installation's missions. Consequently, the implementation of some of these recommendations could sacrifice improvement of Defense Distribution Center, Susquehanna natural resources in deference to the safety and efficiency of the mission.

## 1.3 Organization of the Plan

This INRMP consists of nine sections that describe fundamental characteristics of the installation that include the following:

1. **Section 1** – Introduction
2. **Section 2** – Location, mission, and historical overview of Defense Distribution Center, Susquehanna
3. **Section 3** – Overview of Defense Distribution Center, Susquehanna's natural resources programs
4. **Section 4** – Resource and baseline descriptions of Defense Distribution Center, Susquehanna
5. **Section 5** – Issues, goals, and actions identified for the installation
6. **Section 6** – Review, update, and implementation of this INRMP
7. **Section 7** – List of preparers
8. **Section 8** – References cited
9. **Appendices**.

## 1.4 Regulatory Drivers and Guidance

This INRMP was prepared in accordance with guidance and regulations provided in the Sikes Act Improvement Act (SAIA), as amended through 2003; Department of Defense (DOD) Instruction 4715.03 (*Natural Resources Conservation Program*, 2011); Army Regulation (AR) 200-1, (*Environmental Protection and Enhancement*, 2007); and more recent Department of the Army (DA) and DOD Sikes Act and INRMP guidance memoranda. AR 200-2, *Environmental Analysis of Army Actions* (32 Code of Federal Regulations [CFR] Part 651), states that the U.S. Army will comply with applicable Federal, state, and local environmental laws and regulations.

According to the SAIA, the primary purposes of a military conservation program are conservation and rehabilitation of natural resources, sustainable multipurpose use of those resources, and public access to military lands, subject to safety requirements and military security. Moreover, the conservation program must be consistent with the mission-essential use of the installation and its lands. The SAIA requires the preparation of an INRMP to facilitate the conservation program. The INRMP must be cooperatively developed with the U.S. Fish and Wildlife Service (USFWS) and the state fish and wildlife agency. Representatives from the following Federal, state, and local regulatory agencies and groups were consulted to provide input on this INRMP: USFWS, Pennsylvania Fish and Boat Commission (PAFBC), Pennsylvania Game Commission (PAGC), and the Pennsylvania Department of Conservation and Natural Resources (PADCNR). The resulting plan reflects the mutual agreement of all parties concerning conservation, protection,

and management of natural resources on the installation. The Sikes Act also requires public comment on the INRMP at its inception and with each required five-year revision.

**Appendix B** provides a complete list of laws, regulations, policy, and guidance that direct natural resources management on Defense Distribution Center, Susquehanna.

## 1.5 Approvals, Updates and Revisions

The SAIA requires the preparation of an INRMP in cooperation with the USFWS and the state agencies. In addition, it is required that the resulting Plan reflect the mutual agreement of the parties concerning conservation, protection, and management of fish and wildlife resources. The SAIA also requires that INRMPs must be reviewed for operation and effect no less than once every five years by the DLA, the USFWS, and state signatory agencies. The DOD and DA have provided specific guidance on the joint review and coordination process and timeframe. Installations must document the outcome of the joint review to reflect the parties' mutual agreement, either by a jointly executed letter, receipt of signed letters from the USFWS and state fish and wildlife agency, or a signed new signature page to the INRMP (U.S. Army 2006).

If the five-year INRMP review for operation and effect results in major revisions to the plan, Defense Distribution Center, Susquehanna must solicit public review and comments (U.S. Army 2006). The NEPA process may be used to meet public review requirements if the public is provided a meaningful opportunity to comment on the draft revised INRMP. Absent extraordinary circumstances, the public must be afforded a minimum of 30 days to review and comment on the revisions, either as part of the NEPA process or some other process. After soliciting public comments, Defense Distribution Center, Susquehanna must afford the USFWS and the state agencies the opportunity to review all public comments. If an existing INRMP requires only limited revisions that are not expected to result in biophysical consequences other than those anticipated for the existing INRMP, then neither NEPA analysis nor public review comment are necessary (U.S. Army 2006). This document is considered a major revision and will be subject to public review and comments.

According to the recent DA guidance, INRMPs must be also reviewed by installations at least once per year to verify the following (U.S. Army 2006):

- Current information on INRMP project funding.
- All "must fund" projects and activities have been budgeted for and implementation is on schedule.
- All required trained natural resources positions are filled or are in the process of being filled.
- Projects and activities for the upcoming year have been identified and included in the INRMP. An updated project list does not necessitate INRMP revision.
- All required coordination has occurred.
- All significant changes to the installation's mission requirements or its natural resources have been identified.
- INRMP goals and objectives are still valid.

- No net loss of training capability has occurred due to implementation of the INRMP in accordance with the Sikes Act.

As part of the annual review, Defense Distribution Center, Susquehanna must invite annual feedback from the USFWS and the state signatory agencies on the effectiveness of the INRMP, and inform the agencies which INRMP projects and activities are required to meet current natural resources compliance needs. This information need not be included in the INRMP at the time of annual review but may be provided after the installation reviews and validates the estimated costs of the requirements (U.S. Army 2006). This INRMP is effective for five years from the date of approval.

In addition, DOD has adopted conservation metrics to assess the overall health and trends of the installation's natural resources program and to identify and correct potential funding and other resource shortfalls (DOD 2011). These metrics assess INRMP implementation, measure conservation efforts, ensure no net loss of military testing and training lands across the various installations, promote understanding of the conservation program's installation mission support, and indicate the success of partnerships with the USFWS, state fish and wildlife agencies, and, when applicable, with the National Oceanic and Atmospheric Administration Fisheries Service. Seven focus areas assess requirements, goals, and objectives of the Sikes Act annually for an installation with an INRMP (DOD 2011):

1. INRMP project implementation
2. Federally listed species and critical habitat
3. Partnerships effectiveness
4. Fish and wildlife management and public use
5. Team adequacy
6. Ecosystem integrity
7. INRMP impact on the installation mission.

This INRMP should be reviewed annually to assess the suggested management practices in terms of their appropriateness for current conditions at the installation. In addition, the INRMP should be updated whenever there is a modification to the installation's mission, or there is a substantial change to the natural or cultural resources of the installation. The USFWS should be informed whenever there is a modification to the INRMP or there is a substantial change to natural resources and initiate consultation if an action could affect a federally listed species. Operational Component Plans must be updated annually during preparation of the environmental budgets for the installation.

## 1.6 INRMP Implementation and Responsibilities

Successfully implementing an INRMP requires the support of natural resources personnel, other installation staff, command personnel, and installation tenants. The following section discusses the responsibilities for INRMP implementation within the DA and DLA, and other Federal and state agency stakeholders.

### 1.6.1 Internal Stakeholders

#### 1.6.1.1 Director of Installation Services

The Director of Installation Services is responsible for maintaining the installation and all of the facilities. He is also responsible for implementation and enforcement of this INRMP and compliance with laws and regulations associated with the implementation of this plan.

#### 1.6.1.2 Director of Public Safety

The Director of Public Safety provides law enforcement and security assistance and advice to the Installation Game Warden and acts as a backup to ensure the installation's natural resources are protected. The Director ensures that the Chief of Police instructs the police force on how, when, where, and what to look for while patrolling/enforcing wildlife laws.

#### 1.6.1.3 Chief of Police

The Police Chief supervises the Police Force on the installation and is responsible to the Defense Distribution Center, Susquehanna Commander. The Chief of Police is familiar with all security and law enforcement matters. DOD police are used as the principal means of patrol and field checks.

#### 1.6.1.4 Environmental Office

The Environmental Office has primary responsibility for NEPA compliance at Defense Distribution Center, Susquehanna. Responsibilities include reviewing natural and cultural resources projects on the installation and the evaluation of any potential impacts on those resources.

#### 1.6.1.5 Other Support Proponents

Other installation proponents supporting the implementation of this INRMP include Facilities and Equipment Maintenance, Business Management, Installation Management, Family and Morale, Welfare, and Recreation, and Security and Emergency Services.

### 1.6.2 Headquarters, Defense Logistics Agency

Headquarters, DLA is responsible for ensuring that this INRMP is reviewed and updated, as appropriate, every five years, or at lesser intervals if warranted by changing circumstances. Headquarters, DLA will also ensure that this plan is implemented by conducting external conservation assessments at least once every three years.

### 1.6.3 Army Environmental Command

The U.S. Army Environmental Command (USAEC) provides centralized management, coordination, and execution of Army environmental programs and projects. USAEC issues guidance for the preparation of an INRMP.

### 1.6.4 External Stakeholders

#### 1.6.4.1 Government Agencies and Organizations

##### Federal Agencies

*U.S. Fish and Wildlife Service*

DLA consults with the USFWS regarding endangered species that are known to occur or have the potential to occur on an installation. The installation formed a cooperative agreement in 1990 with the USFWS, the PAGC, and the PAFBC for the conservation and development of fish and wildlife resources at New Cumberland Army Depot (currently Defense Distribution Center, Susquehanna).

*U.S. Army Corps of Engineers*

The U.S. Army Corps of Engineers (USACE) provides contract management, construction management, and technical support. Defense Distribution Center, Susquehanna has the option to use USACE contracts as vehicles for natural resources management and to access USACE organizations, such as the U.S. Army Engineer Research and Development Center for technical assistance and support for natural resources projects.

In addition, the USACE Baltimore District (CENAB) has regulatory authority over waters of the United States, which include activities within perennial and intermittent streams, and wetlands. Section 404 of the Clean Water Act (CWA) authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill materials into the waters of the United States, including wetlands. Therefore, even an inadvertent encroachment into wetlands or other waters of the United States resulting in displacement or movement of soil or fill materials has the potential to be viewed as a violation of the CWA if an appropriate permit has not been issued by the USACE.

*DOD Partners in Flight*

The DOD Partners in Flight (PIF) program consists of a cooperative network of natural resources personnel and others that spans across U.S. military installations, and links with partners throughout the Americas. DOD PIF supports and enhances the military mission by providing a focused and coordinated approach for the conservation of resident and migratory birds and their habitats on DOD lands dealing with all bird species, including migratory, resident, game, and non-game birds. Specifically, DOD PIF develops cooperative agreements for implementing bird conservation programs and projects on military lands, facilitates communication and information sharing across geographic and political boundaries, participates and provides leadership in PIF committees and working groups, and provides military natural resources professionals with the most up-to-date information on bird conservation (DoD PIF 2009).

DOD PIF sustains and enhances readiness through proactive, habitat-based conservation and management strategies that maintain healthy landscapes and training lands. DOD PIF works beyond installation boundaries to facilitate cooperative partnerships, determine the current status of migratory birds, 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. Participating in partnerships, such as PIF, also helps DOD to meet its trust responsibility to conserve our nation's biodiversity more effectively (DoD PIF 2009).

For further information on the DOD Partners in Flight program, go to https://www.denix.osd.mil/dodpif/home/.

### State Agencies

*Pennsylvania Game Commission*

The installation formed a cooperative agreement in 1990 with the PAGC for the conservation and development of fish and wildlife resources at New Cumberland Army Depot (now Defense Distribution Center, Susquehanna). The PAGC will provide technical advice on management of wildlife resources, guidance on interpretation of exemptions from Pennsylvania hunting regulations, and guidance on Pennsylvania management goals and objectives for wildlife resources found at Defense Distribution Center, Susquehanna.

*Pennsylvania Fish and Boat Commission*

The installation formed a cooperative agreement in 1990 with the PAFBC for the conservation and development of fish and wildlife resources at New Cumberland Army Depot (now Defense Distribution Center, Susquehanna). The PAFBC will provide guidance on interpretation of and exemptions from Pennsylvania fishing and boating regulations, technical advice on management of fishery resources, and guidance on Pennsylvania management goals and objectives for fishery resources at Defense Distribution Center, Susquehanna.

#### 1.6.4.2 Non-Government Agencies and Organizations

### Universities

Universities often have cooperative research interests in DOD lands. Colleges and universities that might have potential interests include The Pennsylvania State University (York campus, Harrisburg campus, and State College main campus), Harrisburg Area Community College, Millersville University, and Gettysburg College.

### Contractors

Defense Distribution Center, Susquehanna uses contractors for many programs and activities associated with natural resources and NEPA. Contracted actions involving natural resources at Defense Distribution Center, Susquehanna generally include wetland mitigation plans, cultural resources evaluations, environmental assessments for access improvements, wetland delineation reports, Installation Restoration Program activities, and analytical/ environmental assessment reports for the Installation Master Plan (DLA 2019).

### Other Interested Parties

Various national and local organizations and groups can assist in the implementation of the INRMP. These groups and organizations include Susquehanna River Waterfowlers Association, Audubon Society, Fairview Township, the Sierra Club, The Nature Conservancy, Ducks Unlimited, Boy Scouts and Girl Scouts, hunting and fishing clubs, school districts, and local residents.

## 1.7 Integration with Other Plans

The information presented in this INRMP will be incorporated into the Master Plan. The installation's comprehensive management planning process should incorporate the concerns presented in this INRMP so that the growth of the installation can progress in a manner consistent with, and complementary to, the objectives of the DLA with respect to the protection of natural resources. A Cultural Resources Management Plan was developed in 2001. In 2006, the installation received a variance from the Department of Army requirements to exempt the installation from the requirements for updating and maintaining an Integrated Cultural Resources Management Plan (DLA 2006); no additional resources have been documented since that exemption was approved. As such, the INRMP takes into consideration integrating requirements from cultural resources reports as well as environmental compliance reports and plans. This INRMP is reviewed annually by natural resources personnel to ensure that goals, objectives, and management initiatives contained within this plan do not contradict those contained within the installation and component plans outlined below.

### 1.7.1 Installation Plans

The following installation plans were reviewed to highlight key interrelationships, and recommendations contained within these plans to develop this INRMP. Note that the INRMP is not intended to compile detailed information on each plan and its contents.

- *Integrated Pest Management Plan* (IPMP): The IPMP provides guidance for implementing a pest management program at Defense Distribution Center, Susquehanna and promotes nonchemical controls for managing pests and includes management recommendations for a wide variety of pests (DLA 2020).
- *MS4 Storm Water Management Plan*: Defense Distribution Center, Susquehanna updated the Phase II Municipal Separate Storm Sewer Systems (MS4) program in 2018. The National Pollutant Discharge Elimination System (NPDES) MS4 Permit requires permittees to implement and update a written storm water management program designed to satisfy Minimum Control Measures to protect water quality standards and to reduce the discharge of pollutants to the maximum extent practicable (DLA 2017).
- *Installation Chesapeake Bay Pollutant Reduction Plan* (CBPRP): As a regulated small MS4 that discharges to surface waters within the Chesapeake Bay watershed, the installation also maintains and implements the installation CBPRP and program for storm water discharges of nutrients and sediment. The installation discharges into waters listed as "Impaired" by the State of Pennsylvania and is required to implement pollutant control measures and pollution production Plans accordingly (DLA 2018a).
- *Integrated Contingency Plan for Defense Distribution Center, Susquehanna*: The Integrated Contingency Plan (ICP) was developed to address stormwater pollution prevention for the NPDES Industrial Permit, Authorization to Discharge under the NPDES General Permit for Discharges of Stormwater Associated with Industrial Activity (DLA 2018b).
- *Master Plan*: The Master Plan provides the Defense Distribution Center, Susquehanna with an orderly and comprehensive guide for development to support its assigned mission during a period of 20 years. The Master Plan was developed using a collaborative process with key personnel at the installation, and aligns with the

installation's mission, vision, values, and goals; and its real property vision, goals, and objectives for future development, as established by decisionmakers (DLA 2019).

### 1.7.2 INRMP Component Plans

- *Threatened and Endangered Species Survey and Management Plan*: The Threatened and Endangered Species Survey and Management Plan identifies and maps the locations of threatened and endangered species known to exist or with the potential to exist on the installation. Guidelines were also presented to manage sensitive species while protecting the operational functionality of the mission (DLA 2009b).
- *Invasive and Nonnative Species Survey and Management Plan*: The Invasive and Nonnative Species Survey and Management Plan provides the results of invasive and nonnative species surveys conducted on the installation and a management plan to address those species (DLA 2009d).
- *Wetland Enhancement Plan*: The Wetland Enhancement Plan was developed as a Component Plan to the INRMP (DLA 2006). The Plan provides project design, maintenance, and monitoring protocols for enhancing and restoring wetland habitats on the installation (DLA 2009e).
- *Vegetation and Wildlife Survey Report*: Vegetation communities were delineated and mapped based on dominant species characterizing the location and physiognomic characteristics of the site. Field surveys were conducted to identify, and map vegetation communities and record wildlife species observed on the installation (DLA 2009a). An update to this report was completed in 2015.
- *Wildflower Meadow and Food Plot Plan*: The Wildflower Meadow, Grass Meadow, and Food Plot Plan devises strategies and guidelines for the establishment and maintenance of native wildflower meadows and food plots to increase functional value of the undeveloped upland communities on the installation (DLA 2009f).

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# 2 Location and Mission

This section describes the location and the surrounding communities in relation to the natural resources associated with the areas. A brief history of Defense Distribution Center, Susquehanna and its current missions is also presented.

## 2.1 Location and Surrounding Area

Defense Distribution Center, Susquehanna is in Fairview Township, York County, Pennsylvania, approximately 3 miles south of the City of Harrisburg on the western shore of the Susquehanna River (see **Figure 2-1**). The installation consists of 848 acres of land and is bounded by the Susquehanna River and a railroad right-of-way to the east, the Pennsylvania Turnpike (Interstate [I-] 76) to the south, and the Capital City Airport to the north and west.

Defense Distribution Center, Susquehanna is surrounded by a mix of rural residential, commercial, and industrial uses. To the north and northeast, across from the Susquehanna River, uses in the borough of Steelton are industrial. Land is occupied by ArcelorMittal, a steel mill that was formerly owned and operated by Bethlehem Steel. To the west, property is used by the Capital City Airport, and beyond that is the borough of New Cumberland. Also, to the west, the New Cumberland borough is near the installation's border. Land uses in New Cumberland include parkland and residential at approximately four dwelling units per acre. To the south, across from the Pennsylvania Turnpike, Fairview Township has a designated growth boundary, meaning land is designated of rural conservation (DLA 2012).

## 2.2 Natural Areas in Proximity to Defense Distribution Center, Susquehanna

Pennsylvania offers a diverse range of recreational opportunities. Federally owned public natural areas include the Appalachian National Scenic Trail, which is a 2,174-mile footpath along the ridge crests and across the major valleys of the Appalachian Mountains from Mount Katahdin in Maine to Springer Mountain in northern Georgia. The Pennsylvania stretch covers 229 miles and runs north-south about 15 miles west of Harrisburg (DDSP 2001). There are state-owned resources that are within 30 to 60 miles of the installation. York County maintains a 4,000-acre county park system that includes 61 miles of trails connecting eight parks. In addition, the Susquehanna River offers opportunities for boating, windsurfing, water skiing, and fishing. In the winter, Ski Roundtop offers 16 slopes and 10 lifts, providing ample opportunity for skiing, snowboarding, and snow tubing. Other popular cold-weather activities, such as ice skating and hockey, are available at several venues throughout the county. State-owned public natural areas include the following:

- Boyd Big Tree Preserve Conservation Area (937 acres), approximately 13 miles north
- Gifford Pinchot State Park (2,338 acres), approximately 14 miles south
- Joseph E. Ibberson Conservation Area (350 acres), approximately 24 miles north
- Memorial Lake State Park (230 acres), approximately 28 miles east
- Samuel S. Lewis State Park (85 acres), approximately 34 miles southeast
- Swatara State Park (3,515 acres), approximately 35 miles northeast

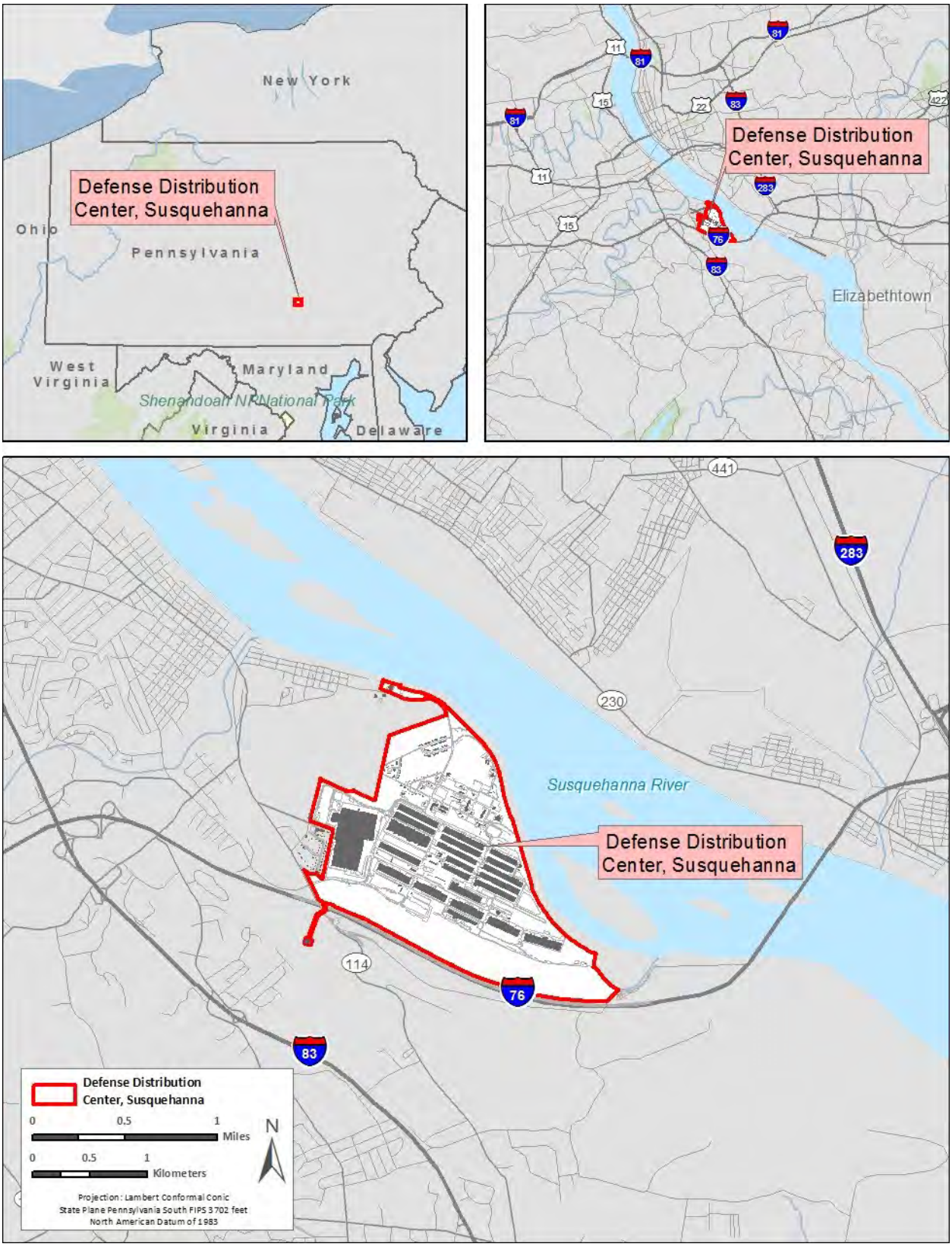


**FIGURE 2-1. Defense Distribution Center, Susquehanna Location Map**

- Kings Gap Environmental Education and Training Center (1,454 acres), approximately 37 miles west
- Little Buffalo State Park (more than 300 acres), approximately 40 miles northwest
- Pine Grove Furnace State Park (696 acres), approximately 40 miles west
- Codorus State Park (3,329 acres), approximately 43 miles south
- Colonel Denning State Park (273 acres), approximately 45 miles west
- Caledonia State Park (1,125 acres), approximately 56 miles southwest (DDSP 2001).

There are also several tracts of state forest that are in proximity to the installation. The Weiser State Forest is approximately 27 miles northeast of the installation. The Michaux State Forest is approximately 40 miles southwest of the installation. The Tuscarora State Forest is approximately 40 miles west of the installation. The Bald Eagle State Forest is approximately 50 miles north of the installation (DDSP 2001).

## 2.3 Historical Overview

In the early part of 1917, construction of the Marsh Run Storage Depot was begun under the supervision of the USACE. Following the Armistice in 1918, the depot was used primarily as a receiving point for supplies being returned from overseas. Between the two world wars, the depot was relatively inactive (DDSP 2001).

However, as World War II approached, the depot experienced tremendous growth. In 1941, depot storage facilities were more than doubled by new construction. During the war, the installation's primary mission was that of a reception center for newly inducted soldiers. More than 90 percent of Pennsylvania's inductees were processed through the center (DDSP 2001).

During the latter stages of World War II, a camp was established for German prisoners. Upon deactivation of this camp and the reception center, a branch of U.S. Disciplinary Barracks was activated, housing as many as 1,500 prisoners. This barracks was deactivated in March 1959 (DDSP 2001).

The end of World War II resulted in emphasis shifting from the shipping of supplies overseas to the receiving and disposing of excess supplies and equipment. Four more warehouses were constructed during the Korean conflict, increasing storage space to almost 4.25 million square feet. In the late 1950s, activity increased in all areas. In 1960, a million-dollar hangar with shops was constructed and connected directly to the Harrisburg-York State Airport (presently known as the Capital City Airport) (DDSP 2001).

In 1962, the Defense Supply Agency was established within the DOD. During this period, the Depot's name was changed to New Cumberland Army Depot, and it became a field installation of the U.S. Army Supply and Maintenance Command. This command was abolished as an organization entity in 1966, and the New Cumberland Army Depot was placed under the jurisdiction of the U.S. Army Materiel Command (DDSP 2001).

The Directorate for Quality was established in June 1966 to consolidate mission quality control and inspection facilities. In November 1967, the Directorate for Supply was assigned the mission

to serve as the East Coast Consolidation Point for all less-than-truckload lots of Army-sponsored cargo destined for Europe (DDSP 2001).

In April 1973, the New Cumberland Army Depot mission was modified to include Aviation Support Command, and in November 1974, the installation was selected as the East Coast Secondary Item Stockage and Issue Point as part of a revised Distribution Plan for Secondary Items (DDSP 2001).

In June 1976, the Defense Supply Agency designated New Cumberland Army Depot as the principal distribution depot supporting U.S. Army units in U.S. Army Europe and in the Eastern Continental United States under the Direct Support System. In September 1976, New Cumberland Army Depot was assigned to the newly designated USA Depot System Command (DDSP 2001).

The aircraft maintenance program was phased out from September 1981 through January 1984. Since January 1984, the New Cumberland Army Depot embarked on the largest military construction program on Army record. This construction program provided site development for future, surge, and mobilization workloads and supports the Army's readiness and modernization program for the Eastern Continental United States (22 states and the Midwest), Europe, Panama, Puerto Rico, and the Middle East. The Eastern Distribution Center (EDC), on the installation, is a 1.82 million-square- foot complex that required two years to complete. It is part of the largest and most modern distribution facility in the DOD. The EDC is a computer-controlled, fully automated facility storing small, high-demand stocks of all supply classes (DDSP 2001).

In April 1991, New Cumberland Army Depot was transferred from the Army Materiel Command to the DLA, and the installation was renamed Defense Distribution Region-East (DDRE). DDRE served as the Headquarters for the Eastern Region under DLA, which composed all the distribution depots east of the Mississippi River. DDRE's counterpart, Defense Distribution Region West (DDRW), was in Stockton, California. The distribution mission of New Cumberland was combined with the supply mission of Defense Depot Mechanicsburg, Pennsylvania, and was renamed Defense Distribution Depot Susquehanna, Pennsylvania. DDRE and Defense Distribution Depot Susquehanna were collocated at the New Cumberland Installation (DDSP 2001).

On October 1, 1997, the DDRE and the DDRW were consolidated into one command, the Defense Distribution Center (DDC), which is headquartered at New Cumberland. The name of DDRE was changed to Defense Distribution Depot Susquehanna, Pennsylvania and is now referred to as Defense Distribution Center, Susquehanna and serves as headquarters for the 26 distribution depots worldwide (DDSP 2001).

## 2.4 Current Military Mission

The New Cumberland military installation and mission has changed over the years as the defense needs of the nation have dictated. The mission has always been to support men and women in uniform. DLA Distribution Susquehanna, Pennsylvania, performs its mission as a modern military distribution complex responsible for providing DOD-owned commodities to all branches of the armed forces and other agencies of the Federal government throughout the world. DLA

Distribution Susquehanna is the largest DOD distribution center under the DLA and within the DLA Distribution.

Defense Distribution Center, Susquehanna is the eastern DLA Strategic Distribution Platform, which provides military and commercial repair parts, clothing and textiles, medical supplies, and industrial and electronic components to military customers throughout the United States and the world (DLA 2007). Defense Distribution Center, Susquehanna is host to DLA Distribution Headquarters, DLA Distribution Susquehanna, and more than 25 other tenants. DLA Distribution Susquehanna is the DLA Distribution mission organization housed at Defense Distribution Center, Susquehanna. DLA Distribution, Susquehanna is the host for the New Cumberland installation and is responsible for the day-to-day operations and maintenance of the small city within its gates. Included in those responsibilities are providing a full range of quality of life services to military members, their families and civilian employees including childcare, a fitness center, golf course, bowling center, and a pool. More than 25 tenant activities are based at New Cumberland and include a Clinic and a Shoppette/Gas Station.

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# 3 Environmental Management Strategy and Mission Sustainability

## 3.1 Supporting Sustainability of the Military Mission and the Natural Environment

AR 200-1 requires each installation to have designated (in writing) natural resources managers, who are knowledgeable and trained in the specific resource issues for that area or region. At Defense Distribution Center, Susquehanna, environmental office staff are responsible for ensuring natural resources on the installation are managed as required by Federal, state, and Army regulation and guidance. Natural resources managers can call upon other environmental professionals within DLA, and USAEC, to assist in the management of natural resources. Defense Distribution Center, Susquehanna environmental personnel will integrate environmental protection, conservation, enhancement/restoration, and outdoor recreation within the constraints of the installation's military mission; at the same time, they will identify risks to the environment that might result from military activities and assist with the development of alternatives to reduce or eliminate the potential impacts.

Defense Distribution Center, Susquehanna does not anticipate changes in land use and development; however, the installation is well-positioned to implement and demonstrate environmentally sound land use planning and development through its land planning and NEPA processes, inter-departmental coordination, adherence to DOD and DA guidance and regulations, and timely review and update of installation site development plans. Development that occurs will be generic and flexible to preserve the natural environment of Defense Distribution Center, Susquehanna. In addition, DA policy requires that all military construction projects meet a Leadership in Energy and Environmental Design (LEED) silver rating under the U.S. Green Building Council LEED 2.0 Green Building Rating System (U.S. Army 2007).

## 3.2 Management Strategy

A past trend in management has been to select and manage a single species based on their perceived importance, either as products or commodities, or their status as threatened or endangered species. While this approach can be successful in some instances, single-species management, whether a commercially valuable tree species or an endangered bird, has severe limitations recognized by the scientific and natural resources community. The health of a single species seldom acts as a good surrogate for the health of an entire ecosystem. This type of management often favors a handful of species at the expense of overall ecosystem health. Ecosystem management is a process that considers the environment as a complex system that functions as a whole, not as a collection of parts, and recognizes that people and their social and economic needs are a part of the whole. The ecosystem management approach has the overarching goal of protecting the properties and functions of natural ecosystems. Over the long term, this approach will maintain and improve the sustainability and biological diversity of terrestrial and aquatic ecosystems while supporting sustainable economies and communities. Maintenance of healthy ecosystems supports realistic military training and testing, which in turn promotes mission readiness.

The Defense Distribution Center, Susquehanna natural resources management program is based on the premise that responsible stewardship and ecosystem management are synonymous and are compatible with integrated natural resources management. Implementation of any type of management activity whose impacts are not fully understood will be tied directly to implementation

of a corresponding monitoring program. The intent is to integrate management activities with ongoing scientific monitoring to provide reliable data and identify trends and causal relationships including both positive and negative impacts of management activities. Acceptable levels or thresholds of management intensity will be identified for different species, taxa, ecosystems, and associations. The management guidelines and prescriptions in the installation INRMP will be revised periodically as site-specific data become available. The INRMP is developed to provide ongoing management direction based on scientific data and a higher level of knowledge of the installation's ecosystems and their inter-relationships. The long-term goal of this INRMP is to bring together and integrate all management activities (e.g., watershed and wildlife management) in a way that sustains, promotes, and restores the health and integrity of the ecosystems. Integrated ecosystem management is sound stewardship, and will, over the long term, ensure the maximum return of ecosystems goods and services at minimum cost to the installation.

## 3.3 Natural Resources Program Management Strategy

Ecosystem management calls for enhanced efforts to understand complexity, to open up to new ideas and challenges, and to incorporate a broad diversity of perspectives into thoughtful, multidisciplinary management. Managers know enough about broad patterns of ecological systems to initiate well-considered management plans in an experimental fashion, monitor early results of those plans, and then modify them as more information accumulates. This process is known as adaptive management. Adaptive management is more than just monitoring effectiveness of management actions. It requires that the assumptions underlying a management approach, and expected outcome, be made explicit before action is taken. Adaptive management involves establishing hypotheses and a framework for analyzing differences between expected and observed outcomes. Adaptive management is also about experimentation and probing ecosystems to understand how they operate. The natural resources manager is not just testing a specific management approach, but is also trying to understand the structure, patterns, and processes that sustain the ecosystem integrity. Over time, this knowledge enriches the foundation for management. Adaptive management helps ensure that an installation's INRMP will not be a document on the shelf, but a framework for an ongoing management process.

## 3.4 Natural Resources Compliance Requirements

Natural resources compliance focuses on maintaining compliance with major Federal laws that affect Defense Distribution Center, Susquehanna activities. A comprehensive list of applicable laws is included in **Appendix B**. The following paragraphs discuss the most prominent laws:

***Endangered Species Act.*** Federal agencies are required by the Endangered Species Act (ESA) (16 United States Code [U.S.C.] 1531 et seq.) to manage federally listed threatened, endangered, and species of concern and their habitat in a manner that promotes conservation of them and is consistent with species recovery plans. Section 7 of the ESA requires all Federal agencies to enter consultation with the USFWS or the National Marine Fisheries Service whenever proposed actions might affect federally listed threatened, endangered, and species of concern plants and animals. At the Defense Distribution Center, Susquehanna, proposed projects, operations, or other actions, are scrutinized for potential impacts on federally listed threatened, endangered, and species of concern through a formal review process. Section 7 consultations will be initiated if warranted, otherwise, written documentation that there are no effects on federally listed threatened, endangered, and species of concern will be generated by the natural resources

manager and kept with the project files. The natural resources manager will use the installation's INRMP as a tool to identify at an early stage the potential impacts of planned DLA actions on endangered or threatened species and to provide a basis for altering the action to prevent or minimize those impacts.

USFWS could require changes or minimization measures that could result in delays and additional costs. Because of this, it is imperative that the installation initiate early environmental/natural resources review of proposed actions, in order to assess risks, develop alternatives, and correctly identify minimization measures and costs both in terms of time and dollars.

***Migratory Bird Treaty Act.*** The Migratory Bird Treaty Act (MBTA) of 1918, as amended, implements treaties and conventions between the United States, Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. The MBTA made it illegal for people to "take" migratory birds, their eggs, feathers, or nests. Take is defined in the MBTA to include by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing or transporting any migratory bird, nest, egg, or part thereof. The U.S. Department of the Interior has authority to arrest, with or without a warrant, a person violating the MBTA.

***Bald and Golden Eagle Protection Act.*** The Bald and Golden Eagle Protection Act (BGEPA) of 1940, as amended, prohibits the take, possession, and commerce of bald and golden eagles except under certain specified conditions.

***Clean Water Act.*** The CWA establishes the basic structure for regulating discharges of pollutants into waters of the United States and regulating quality standards for surface waters. The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained. The U.S. Environmental Protection Agency (USEPA) National Pollutant Discharge Elimination System (NPDES) permit program controls discharges.

## 3.5 Public Access and Outreach

The SAIA and DOD Instruction 4715.03 encourage public access to DOD lands for the enjoyment and use of natural resources if such activity is compatible with the military mission and the ecosystem can support such use. Due to the nature of the military mission at Defense Distribution Center, Susquehanna, security considerations require access to the southern end of the installation to be restricted. Therefore, opportunities for outdoor recreation in the wooded and wetland areas around Marsh Run Creek are available only to installation personnel with permitted access to the restricted area.

Defense Distribution Center, Susquehanna has a good relationship with surrounding communities. Fairview Township and the installation work together for special events or ceremonies that could create traffic concerns. The township works with the installation in terms of road improvements to facilitate traffic that is generated during shift changes.

The installation has traditionally maintained open communication with neighboring communities. In the 1980s, an increased need for communication was developed as a result of environmental contamination found in the area. Subsequently, a formal community relations program was established to disseminate information through designated platforms (i.e., Web site, newsletters)

on a consistent basis. The installation continues to communicate to the public through various means including media postings, mailings, briefings, and holding public information meetings.

## 3.6 Achieving No Net Loss of the Military Mission

Implementation of this INRMP by Defense Distribution Center, Susquehanna will ensure that natural resources will continue to support the installation mission, and any future growth, or development activities planned for the installation. Supporting the elements contained within the INRMP will ensure that any future development is conducted in an environmentally sensitive way (i.e., smart growth).

This INRMP strives to integrate natural resources management with other installation plans and activities. It also establishes drivers that represent a long-term vision for the health and quality of natural resources on Defense Distribution Center, Susquehanna. The INRMP drivers might be revised over time to reflect changing missions and environmental conditions. Any future changes in mission, training activity, or technology should be analyzed to assess their impacts on natural resources. As new guidance and regulations from DOD and DLA are developed, they will be integrated with the drivers and management actions of this INRMP. The INRMP will be reviewed, assessed, and modified as needed on an annual basis to ensure continued integration with other management plans or changes in military mission.

# 4 Existing Conditions

Defense Distribution Center, Susquehanna proposes to implement an INRMP, which supports the management of natural resources as described by the Plan itself. The following text describes the existing conditions of resources that are potentially affected by implementation of the INRMP (i.e., the Proposed Action).

## 4.1 Airspace Management and Safety

Each year, civil and military aircraft strike thousands of birds. These strikes cause in excess of $33 million in damages. Because pilots and crews use the same low altitude airspace as large concentrations of birds, preventing bird strikes is a serious issue to the military. The Capital City Airport, adjacent to the installation, is used by private aviation and military aircraft. A total of 27,350 aircraft operations were completed at the airport in 2010; of this total, 81 percent was private aviation traffic and 19 percent was military traffic (FAA 2012).

### Bird/Wildlife Aircraft Strike Hazard

Large numbers of avian species at Defense Distribution Center, Susquehanna can present a Bird/Wildlife Aircraft Strike Hazard (BASH) to the neighboring airport. There were 20 reported strikes from 1991 to 2011, with only 2 of these involving military aircraft (see **Table 4-1**). All but one of these incidents occurred during the day. Species involved in the strikes included peregrine falcon (*Falco peregrinus*); red-tailed hawk (*Buteo jamaicensis*); killdeer (*Charadrius vociferus*); bank swallow (*Riparia riparia*); mourning dove (*Zenaida macroura*); European starling (*Sturnus vulgaris*); turkey vulture (*Cathartes aura*), and various gulls, sparrows, and swallows.

**TABLE 4-1 Wildlife Strike Incidents Reported for Capitol City Airport, PA from 1991–2011**

| Incident Date (year) | Number of Incidents | Damage |
|---|---|---|
| 2010 | 1 | N |
| 2009 | 3 | U |
| 2008 | 1 | N |
| 2007 | 1 | U |
| 2006 | 1 | U |
| 2005 | 6 | N-M |
| 2004 | 1 | S |
| 2002 | 2 | N |
| 2001 | 1 | M |
| 1997 | 1 | N |
| 1996 | 1 | M |
| 1991 | 1 | M |

*Source: FAA 2012*
*Key:*
*N: none* *M: minor*
*S: substantial* *U: unknown*

DOD continually implements and improves aviation safety programs to provide the safest flying conditions possible. One of these programs is the BASH prevention program. Throughout DOD,

air operations, aviation safety, and natural resources personnel work together to reduce the risk of bird and wildlife strikes through the Operational Risk Management process.

Development and implementation of an effective BASH program requires constant interaction between installations' natural resources managers, aviation safety and air operations communities, and pilots and aircrews. Habitat modifications and scaring birds away from the runways are an integral part of the answer, and understanding the behavior and movements of birds in relation to the airfield environment and military training routes by pilots and aircrews is also a critical factor in reducing bird strikes. By identifying the bird species involved and the location of the strike, researchers and airport managers can better understand why the species is attracted to a specific area of the airport or training route. DOD PIF coordinates with and provides information to DOD's BASH programs to ensure that decisions are made with the most current bird conservation data.

The Federal Aviation Administration (FAA), U.S. Air Force, U.S. Army, USEPA, USFWS, and the U.S. Department of Agriculture (USDA) signed a Memorandum of Agreement in July 2003 to acknowledge their respective missions in protecting aviation from wildlife hazards. Through the Agreement, the agencies established procedures necessary to coordinate their missions to address more effectively existing and future environmental conditions contributing to collisions between birds or wildlife and aircraft (i.e., strikes) throughout the United States (FAA 2007).

## 4.2 Land Use

Land uses are intended to describe the general development character of an area. The following descriptions of land uses were derived from the Master Plan (DLA 2019). Master Planning process aids in siting development and protection of natural resources. Defense Distribution Center, Susquehanna has the following six general land use areas: Industrial, Environmentally Sensitive Area, Community, Professional/Institutional, Residential, and Ranges and Training.

- **Industrial.** Industrial land uses designate production, maintenance, depot and storage activities, and utility buildings. These are uses that tend to generate heavy traffic, loud outdoor equipment, noise, smoke, or large amounts of steam. These buildings on the installation include the access control points (ACPs), storage facilities, the EDC, and utility buildings.
- **Environmentally Sensitive Area.** The southern portion of the installation is designated as an Environmentally Sensitive Area. This land is a closed landfill that is classified as wetland, a factor that renders it unsuitable for future development. This area is currently a natural area and will be maintained as such in the future (see **Photograph 4-1**).
- **Community.** Community land use encourages a mix of uses that together create a quality living environment for employees and residents. Community facilities include Family Support, Personnel Services, Medical, Religious, Commercial, Housing, and Recreation. Defense Distribution Center, Susquehanna uses that are considered Community include the Post Exchange, Child Development Center, Health Clinic, Bowling Alley, Auto Hobby Shop, Public Safety, Golf Course, Fitness Center, Outdoor Swimming Pool, and Picnic Pavilions.
- **Professional/Institutional.** Professional/Institutional land uses provide for nontactical organizations. Administrative uses on the installation include the DLA Distribution

Headquarters, DLA Training Center, DLA Human Resources, Recruiting Offices, and General Services Administration Harrisburg Fleet Management Center. Most tenant activities are administrative and are located in Building 54.

**PHOTOGRAPH 4-1. Undeveloped Land (foreground), Capped Landfill (middle), and Industrial Warehouses (background)**

- **Residential.** Housing consists of 140 family housing units and 75 barracks units for the Army National Guard transient population. Four of the units are new, and the others have been renovated in phases over the past 10 years. There are no future expansions planned, nor are additional amenities planned. Housing is within walking distance to community support and is integrated with the Golf Course.
- **Ranges and Training.** Ranges and Training lands typically include live- and nonlive-fire ranges, confidence course, drivers training, land navigation, and company Headquarters. Training on the installation includes the U.S. Army Reserve buildings and land allocated for the Firing Range. The U.S. Army Reserve building is not used for outdoor training, which makes the Professional/ Institutional land use more appropriate.

The percent area for each designated land use zone is shown in **Table 4-2**.

**TABLE 4-2. Summary of Existing Land Uses at Defense Distribution Center, Susquehanna**

| Land Use | Percent Land Use |
|---|---|
| Industrial | 48 |
| Environmentally Sensitive Area | 23 |
| Community | 15 |
| Professional/Institutional | 10 |
| Residential | 4 |
| Ranges and Training | < 1 |
| **Total** | **100** |
| *Source: DLA 2012* | |

## 4.3 Climate

The Defense Distribution Center, Susquehanna area is characterized by a relatively mild but humid climate with annual average temperatures as follows: spring, 51.0 degrees Fahrenheit (°F); summer, 73.1°F; fall, 55.1°F; winter, 38.0°F. The annual average temperature is 53°F. Winters are relatively short, with temperatures below 32°F occurring an average of 100 days a year. Summers are relatively warm and long with temperatures reaching 90°F or higher approximately 25 days a year (DDSP 2001).

The average annual rainfall is 36 inches recorded at Harrisburg State Airport, York County, Pennsylvania. An average yearly snowfall of 31.8 inches was recorded at York Pumping Station, York County, Pennsylvania. The prevailing winds are from the west, drawing any weather disturbances from the interior of the continent (DDSP 2001).

## 4.4 Air Quality

Defense Distribution Center, Susquehanna is located in York County, Pennsylvania, which is within the South-Central Pennsylvania Intrastate Air Quality Control Region (AQCR). The Air Quality Control Region also includes all of Adams, Cumberland, Dauphin, Franklin, Lancaster, Lebanon, and York counties, Pennsylvania (USEPA 2002a). York County has been designated by the USEPA as unclassified/attainment for all criteria pollutants except Fine Particle ($PM_{2.5}$) and 8-hour ozone. $PM_{2.5}$ is designated as nonattainment, and 8-hour ozone is designated as Former Subpart 1 maintenance (USEPA 2002b, USEPA 2011b, USEPA 2011c). According to 40 CFR Part 81, no Class I areas are located within 10 kilometers of Defense Distribution Center, Susquehanna (USEPA 2011d). Defense Distribution Center, Susquehanna has a Title V operating permit (Permit No. 67-05041). Air emissions from the installation are primarily produced from the burning of number 2 fuel oil (for heat and the operation of emergency generators) and the operation of degreasing stations and woodworking operations. Most of the installation's air emissions come from the operation of the heat plant (PADEP 2010).

## 4.5 Geological Resources

Most of the terrain within the installation generally displays slopes of less than 10 percent trending toward the north and south, away from the higher central administration area. Much steeper slopes are encountered along the eastern boundary of the installation. The installation's elevation ranges from approximately 380 feet above mean sea level (MSL) on the eastern side of the facility, near the Susquehanna River, to a minimum elevation of 300 feet above MSL on the southern side of the facility near the Marsh Run Creek stream corridor. There are no serious on-site erosion problems associated with the topographic features at Defense Distribution Center, Susquehanna (DDSP 2001).

Landscapes within the Great Valley section of Defense Distribution Center, Susquehanna are of low relief, and most of the installation consists of a flat plateau that drops off sharply to the Susquehanna River. In the Triassic Lowlands portion of the installation, the landscape has more relief, and Marsh Run has eroded a deep stream channel into the local bedrock (DDSP 2001).

### 4.5.1 Geology

Defense Distribution Center, Susquehanna straddles two major physiographic provinces. The northwestern 75 percent of the installation lies within the Great Valley section of the Appalachian Ridge and Valley physiographic province. The Great Valley section is wide, fertile lowland with minimal topographic relief and is primarily underlain with limestone bedrock. The southeastern 25 percent of the installation lies within the Triassic Lowlands of the Piedmont physiographic province. This region has more relief and is primarily underlain by coarse sandstone bedrock (DLA 2007).

### 4.5.2 Topography

The area surrounding Defense Distribution Center, Susquehanna is rolling to moderately hilly. Within the boundaries of the installation, the terrain contains slopes of less than 10 percent, trending toward the north and south away from the higher central administration and warehouse areas. Along the western and southern boundaries of the installation is swampy lowland that contains Marsh Run Pond and Creek. Along the eastern and northern boundaries of the installation are escarpments that abruptly rise between 20 and 80 feet above the Susquehanna River's surface. In general, the developed portions of the installation have been graded to accommodate past and current development (DLA 2007).

Elevations at the installation range from approximately 300 feet above MSL along the Susquehanna River to approximately 385 feet above MSL in the central administrative portions of the installation.

### 4.5.3 Soils

Due to the highly urbanized landscape at Defense Distribution Center, Susquehanna, much of the soil at the installation has been designated by the U.S. Department of Agriculture Natural Resources Conservation Service as "Urban land." This designation means that natural soil structure largely has been eliminated due to widespread man-made development and impervious surfaces. The Natural Resources Conservation Service does not provide a characteristics or engineering limitations summary for soil with such designation. The only areas of natural soil structure remaining at the installation typically are found in areas with development restrictions (DLA 2007, USDA NRCS 2011). Examination and identification of soils or soil-like materials in this mapping unit is impractical. Detailed onsite characterizations are necessary to determine potential uses and limitations of this mapping unit. Additional soils mapped on installation include the Bowmansville silt loam, Rowland silt loam, and the Penn silt loam, 3 to 8 percent slopes. These soils are mapped in the southeast corner of the installation (DLA 2007). See **Figure 4-1** for a soil map of Defense Distribution Center, Susquehanna.

### 4.5.4 Geologic Hazards

The U.S. Geological Survey has classified the Defense Distribution Center, Susquehanna area as having a low potential for earthquake hazards. The region of Defense Distribution Center, Susquehanna has a seismic hazard rating of approximately 8 to 16 percent gravity, meaning little or moderate damage to buildings would be expected during an earthquake that has a 2 percent chance of occurring during a 50-year period (USGS 2008). A fault area exists on the northern portion of the installation, which constrains the development of large buildings across the fault zone (DLA 2007).

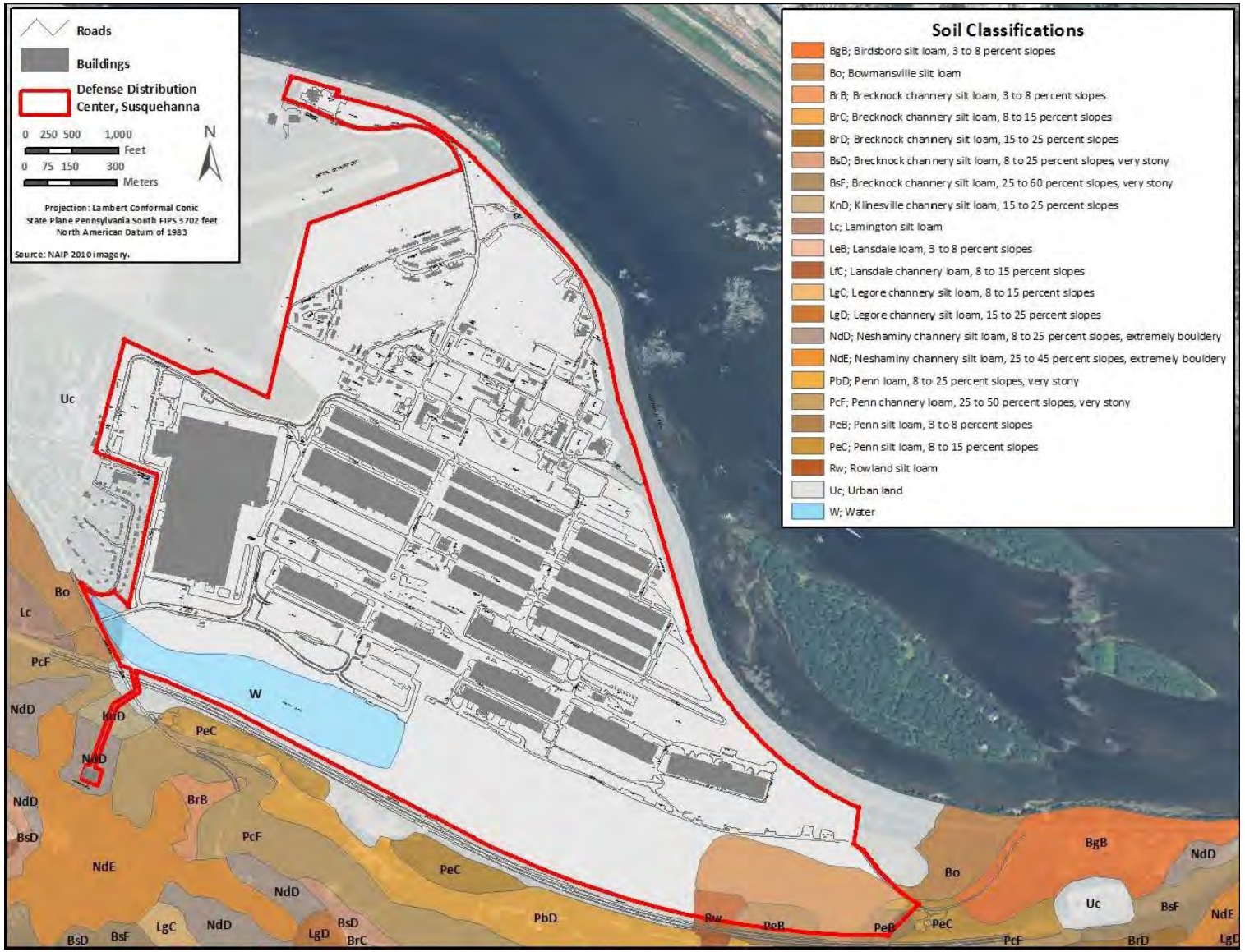



**FIGURE 4-1. Soil Map of Defense Distribution Center, Susquehanna**

## 4.6 Water Resources

### 4.6.1 Groundwater

***Groundwater.*** Groundwater resources at Defense Distribution Center, Susquehanna are hydrologically connected with movement in the bedrock being generally restricted to joints, faults, bedding planes, and solution channels. The groundwater on the installation is generally contained within overlying alluvial materials. The depth to groundwater is shallow, approximately 0 feet to 30 feet. The shallow water table intercepts the land surface in and around the Marsh Run Creek stream corridor (Weston Solutions 2007).

***Groundwater Quality.*** Due to past activities at Defense Distribution Center, Susquehanna (maintenance and repair of helicopters) and the presence of landfills, salvage yards, and fuel storage tanks, the groundwater has been impacted by trichloroethylene, dichloroethylene, carbon tetrachloride, and various benzene derivatives. Groundwater contamination is monitored and evaluated on an installation-wide basis using approximately 120 monitoring wells. The data are used to support the Installation Restoration Program (DDSP 2001).

### 4.6.2 Surface Water

***Surface Water.*** The Susquehanna River and Marsh Run Creek are the primary surface water features at Defense Distribution Center, Susquehanna. The installation is bordered to the north and to the east by the Susquehanna River; Marsh Run Creek flows parallel to the southern boundary of the installation and discharges into the Susquehanna River. A section of Marsh Run Creek within the installation boundary was dammed by the USACE in the 1960s, forming Marsh Run Pond, which is located at the southwestern portion of the installation. Most surface water at the installation drains through storm water-handling infrastructure from the higher elevations in the center of the installation to the south into Marsh Run Pond and Creek; however, the northern cantonment area drains to the north and east into the Susquehanna River. As per Pennsylvania Code, Title 25, Chapter 93 (Water Quality Standard), Marsh Run has an aquatic life protected use classification of Warm Water Fishery, Migratory Fishes. Marsh Run is not listed as approved trout waters by the PAFBC. Marsh Run is not listed as a Class A wild trout stream, nor is it listed as a stream that supports natural reproduction of trout; therefore, no in-stream restrictions are anticipated as a result of this project. ~~Marsh Run Creek is classified under the Pennsylvania Water Quality Standards as a cold water fishery and the Susquehanna River is classified as a warm water fishery (DLA 2007).~~

***Surface Water Quality.*** Surface water quality on the installation is monitored at eight locations throughout the Marsh Run wetland complex. This wetland complex and a few smaller adjacent jurisdictional wetlands compose approximately 95.35 acres. Volatile organic compounds and semi-volatile organic compounds are monitored at all locations.

The CWA requires the implementation of programs to eliminate or reduce the pollution of interstate waters and tributaries and to improve the sanitary condition of surface and underground waters. The CWA helps prevent pollution through such programs as the NPDES permitting program. Until 2016, Defense Distribution Center, Susquehanna operated under an NPDES permit for discharges of storm water associated with industrial activities through outfalls at the Marsh Run Creek and at the Susquehanna River. The permit was effective April 1, 2011, until March 31, 2016. Under this permit, the installation was required to develop a SWPPP. It was

determined that the installation's Pollution Prevention and Hazardous Waste Minimization Plan met the permit requirement because it outlined procedures to reduce the potential for water quality effects and the plan has since been updated (DLA 2017).

Defense Distribution Center, Susquehanna updated the Phase II MS4 program in 2018. The NPDES MS4 Permit requires permittees to implement and update a written storm water management program designed to satisfy each of the following six Minimum Control Measures to protect water quality standards and to reduce the discharge of pollutants to the maximum extent practicable:

1. Public Education and Outreach
2. Public Participation and Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff
5. Post Construction Site Runoff
6. Pollution Prevention/ Good Housekeeping.

The installation also updated the MS4 Storm Water Management Plan in 2018 (DLA 2018b). The program update reflects changes due to regulatory requirements, permit activities and Best Management Practices (BMPs) that support the update and compliance activities associated with NPDES Permit 2018 Stormwater Discharges from MS4 Permit (PAG133590). Specifically, activities relating to the Chesapeake Bay Act, addressing nutrient management requirements and toxicity reduction strategies.

~~Additionally, the installation is developing a Chesapeake Bay Pollutant Reduction Plan. If any portion of a regulated small MS4 is located in and discharging to receiving watersheds draining to the Chesapeake Bay, then it is necessary to develop and implement this plan, approved by the Pennsylvania Department of Environmental Protection (PADEP). The Plan would assess the potential and actual nutrient runoff to receiving streams and provide a strategy for reducing the nutrient loading to receiving streams in accordance with the Chesapeake Clean Water Act (CCWA).~~The installation is a regulated small MS4 subject to the requirements of the 2018 Pennsylvania Department of Environmental Protection (PADEP), PAG-13, NPDES General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (3800-PM-BCW0100). As a regulated small MS4 that discharges to surface waters within the Chesapeake Bay watershed, the installation maintains and implements the installation CBPRP and program for storm water discharges of nutrients and sediment.

The installation discharges into waters listed as "Impaired" by the State of Pennsylvania and is required to implement pollutant control measures and pollution production plans accordingly. The northern "upper" portion of the installation discharges primarily to the Susquehanna River, and the southern "lower" portion of the facility discharges to Marsh Run. The Susquehanna River and Marsh Run ultimately drain to the Chesapeake Bay, and therefore the entire installation is subject to requirements associated with the Chesapeake Bay Impairments for nutrients and siltation. The pollutants of concern are total nitrogen, total phosphorus, and sediment.

The installation CBPRP outlines the BMPs selected to achieve minimum required reductions in loading for pollutants in order to meet the required reduction goals (DLA 2018a). The installation has funded and initiated projects that will achieve the required pollutant reductions as described in the CBPRP. A conceptual design was first presented in the INRMP (2016) and then presented in the CBPRP. Design implementation projects were then described as funded in the 2019 INRMP installation review. See **Section 4.7.3** for details regarding wetland mitigation projects on the installation.

### 4.6.3 Floodplains

Executive Order (EO) 11988, *Floodplain Management,* requires that Federal agencies preserve the natural and beneficial values served by floodplains while managing Federal lands. Activities in floodplains must be evaluated for their impacts during project planning, alternative sites outside the floodplain must be considered, and no disturbance of floodplains can occur unless there is no practicable alternative to doing so.

Approximately 140 undeveloped acres in the southern portion of the facility, adjacent to the Pennsylvania Turnpike, are located within the Marsh Creek 100-year floodplain. The remaining 736 acres are above the 100-year floodplain (CH2M HILL 2001). Mitigation projects described in **Sections 4.6.2** and **4.7.3** also address the floodplains on the installation.

## 4.7 Biological Resources

### 4.7.1 Vegetation

Defense Distribution Center, Susquehanna is in the Central Appalachian Broadleaf Forest-Coniferous Forest-Meadow Province described by Bailey (1995), which is characterized as a mixed oak-pine forest. These areas form an upland buffer separating the wetland and water resources along Marsh Run Creek from the developed area to the north and the Pennsylvania Turnpike to the south.

The vegetation communities of Defense Distribution Center, Susquehanna reflect environmental conditions and disturbance history. York County is almost entirely within the Piedmont Province which is divided into three sub-sections. The Gettysburg-Newark Lowland Section, where Defense Distribution Center, Susquehanna occurs, occupies the northern third of the County and is characterized by rolling lowlands with isolated hills and highlands made up of red and gray shale, siltstone, sandstone, conglomerate, and diabase (YCPC 2004).

Terrestrial forest communities in the Gettysburg-Newark Lowland Section are classified as Mixed Oak Forest, dominated by white, red, and black oaks often mixed with tulip poplar (*Liriodendron tulipifera*), red maple (*Acer rubrum*), and beech (*Fagus* spp). The area was originally described as the Oak-Chestnut Forest Region until the introduction of the chestnut blight fungus to America in 1904. Tulip poplar is currently a dominant species of many of the terrestrial communities (YCPC 2004).

Wetland communities include nontidal emergent wetlands around the perimeter of Marsh Run Pond, Marsh Run Creek, unnamed perennial and intermittent tributaries that feed the pond and creek, various isolated seep pockets, and floodplain forests in the southern section of the installation. Emergent wetlands and marshes are characterized by some combination of sedges (*Carex* spp.), grasses, rushes (*Juncus* spp.), cattail (*Typha* spp.), and sensitive fern (*Onoclea*

*sensibilis*). Floodplain forests are characterized by a canopy containing a combination of silver maple (*Acer saccharinum*), sycamore (*Platanus occidentalis*), river birch (*Betula nigra*), black willow (*Salix nigra*), green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), or box-elder (*Acer negundo*). Shrubs and vines common to these forests include spicebush (*Lindera benzoin*), ninebark (*Physocarpus opulifolius*), silky dogwood (*Cornus amomum*), Virginia creeper (*Parthenocissus quinquefolia*), and poison ivy (*Toxicodendron radicans*).

The 2015 *Vegetation and Wildlife Survey Report* (**Appendix I**) was developed for the Defense Distribution Center, Susquehanna as an update to the 2009 *Vegetation and Wildlife Survey Report* (DDSP 2009) that was developed as a component plan for the 2006 INRMP for the installation (DDSP 2006). Field surveys were conducted within the 135–acre undeveloped portion of the installation on April 30 and May 1, 2015, to: 1) survey the plant communities to update the existing information with the location, extent, and species composition, and 2) update the wildlife inventory for the installation.

The results of the survey indicate that eight (8) plant communities, as described by *Terrestrial and Palustrine Plant Communities of Pennsylvania* 2nd Edition (Zimmerman et al. 2012; Fike 1999), were documented at the installation. These include:

Palustrine Plant Communities

- Cat-tail Marsh
- Common Reed Marsh
- Silver Maple Floodplain Forest
- Sycamore-Mixed Hardwood Floodplain Forest
- Red Maple-Mixed Shrub Palustrine Woodland
- Black Willow Scrub/Shrub Wetland.

Terrestrial Plant Communities

- Red Maple (Terrestrial) Forest
- Tuliptree - Beech - Maple Forest.

The following sections describe the plant communities documented at the installation during the Spring 2015 surveys (DLA 2015).

#### 4.7.1.1 Palustrine Plant Communities

***Cat-tail Marsh.*** This plant community occurs in small pockets along the perimeter of the Marsh Run impoundment and within the emergent wetlands along Marsh Run at Defense Distribution Center, Susquehanna (see **Photograph 4-2**). In some locations the cat-tail marsh is mixed with the common reed marsh.

**PHOTOGRAPH 4-2. Cattail Fringe Surrounding Marsh Run Impoundment**

According to Zimmerman et al. 2012, this community included emergent marshes dominated by common cattail (*Typha latifolia*), and can occur in a variety of landscape positions including river backwaters, protected pond and lakeshores, and upland depressions. Shrubs may be present but cover less than 20 percent. This community is also common in disturbed landscapes (e.g., roadside ditches, storm water detention basins, disturbed portions of other wetland communities), where bare soil is available for colonization. This community may also occur where other wetland types have experienced an increase in nutrients, such as fertilizer run-off. The substrate may be muck or mineral soil. The surface is usually flooded for most of the year. Associated species include wool-grass (*Scirpus cyperinus*), arrow-arum (*Peltandra virginica*), bur-reed (*Sparganium americanum*), sensitive fern (*Onoclea sensibilis*), jewelweed (*Impatiens capensis*), pickerel-weed (*Pontederia cordata*), wapato (*Sagittaria latifolia*), beggar- ticks (*Bidens* spp.), smartweeds (*Polygonum* spp.), duckweed (*Lemna minor*), and sedges (*Carex* spp.) – especially tussock sedge (*C. stricta*). The invasive species found in these systems include common reed (*Phragmites australis* ssp. *australis*), narrow-leaved cattail (*Typha angustifolia*), and purple loosestrife (*Lythrum salicaria*).

***Common Reed Marsh.*** This plant community occurs along with cattail within the emergent wetlands along Marsh Run at Defense Distribution Center, Susquehanna.

According to Zimmerman et al. 2012, this community occurs in standing water for most or all of the year and is often associated with impounded drainages, ponded areas near streams, or saturated areas surrounding drainages. The community occurs on poorly drained soils, usually mucky silt loam or shallow mucky peat. Vegetation is strongly dominated by common reed, which can form nearly monotypic stands. Other associated species may include common cat- tail, wool-

grass, smartweeds, bonesets (*Eupatorium* spp.), sensitive fern, and rice cutgrass (*Leersia oryzoides*). The exotic invasive species narrow-leaved cat-tail and purple loosestrife can be present in these wetlands.

***Black Willow Scrub/Shrub Wetland.*** This plant community occurs on the southwestern fringe of the Marsh Run impoundment at Defense Distribution Center Susquehanna.

According to Fike (1999), the black willow scrub/shrub community is usually associated with streams and riverbanks. Black willow is usually the dominant, with dogwoods (*Cornus* spp.) and alders (*Alnus* spp.) occurring as associates. The herbaceous layer varies, but often includes smartweeds and beggar-ticks.

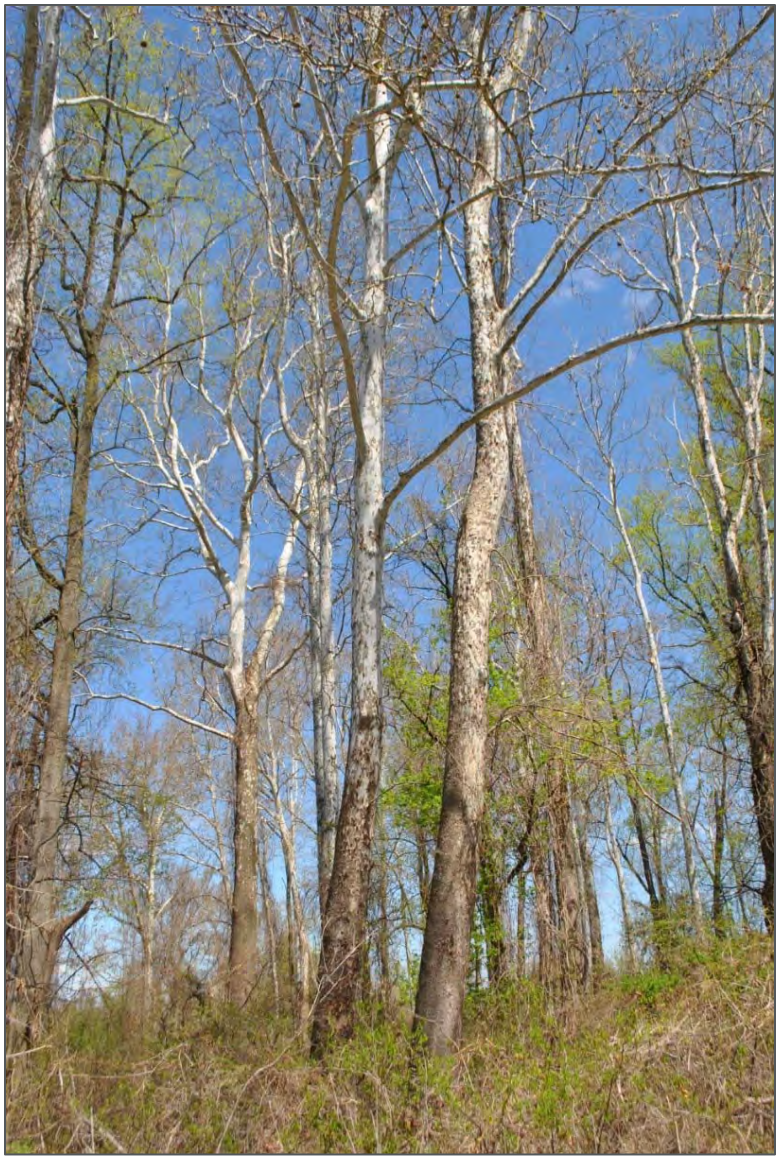
***Silver Maple Floodplain Forest.*** This plant community occurs along the downstream reach of Marsh Run at Defense Distribution Center Susquehanna (see **Photograph 4-3**).

According to Zimmerman et al. 2012, this community is most common on low terraces and levees of the floodplain and islands of large tributaries of the major drainages of Pennsylvania. Soils vary from moderately well-drained (scour zone stands, coarse sand, gravel and/or cobble substrate) to poorly drained (low flood flow velocity areas, sandy loam to silt loam substrates). The canopy is strongly dominated by silver maple, which may be the only canopy tree species present at a site. Other canopy trees, when present, include red maple, black willow, box-elder, American elm, and slippery elm (*Ulmus rubra*). River birch is present in the canopy in the Susquehanna River basin. Shrubs include silky dogwood, gray dogwood (*Cornus racemosa*), poison-ivy, spicebush, elderberry (*Sambucus canadensis*), and arrow-wood (*Viburnum recognitum*). Herbs include ostrich fern (*Matteuccia struthiopteris*), jewelweed, pale jewelweed (*Impatiens pallida*), Turk's-cap lily (*Lilium superbum*), clearweed (*Pilea pumila*), rice cutgrass, sensitive fern, Jack-in-the-pulpit (*Arisaema triphyllum*), green-dragon (*Arisaema dracontium*), stout woodreed (*Cinna arundinacea*), false nettle (*Boehmeria cylindrica*), common blue violet (*Viola sororia*), and jumpseed (*Polygonum virginianum*). Commonly occurring invasive plant species are multiflora rose (*Rosa multiflora*), Morrow's honeysuckle (*Lonicera morrowii*), common privet (*Ligustrum vulgare*), Japanese barberry (*Berberis thunbergii*), Japanese stiltgrass (*Microstegium vimineum*), Japanese knotweed (*Fallopia japonica*), and garlic-mustard (*Alliaria petiolata*).

**PHOTOGRAPH 4-3. Silver Maple Floodplain Forest with Tussock Sedge**

***Sycamore-Mixed Hardwood Floodplain Forest.*** This plant community occurs in several areas along Marsh Run at Defense Distribution Center Susquehanna (see **Photograph 4-4**).

According to Zimmerman et al. 2012, this community is primarily associated with intermediate and smaller tributaries on low to intermediate elevation islands and terraces. The presence of several tree species with low to moderate flood tolerance suggests the substrate is sufficiently coarse and the flow is sufficiently rapid to prevent significant development of anaerobic soil conditions. The substrate is saturated or inundated annually from less than a week to as long as three months each year (typically more than seven weeks each year). The substrate is usually coarse sand and gravel, often with inclusions of cobble-lined scour channels. This community is clearly dominated by sycamore in the forest canopy, but usually has significant cover of one or more other hardwood species. Typical canopy associates include sugar maple (*Acer saccharum*) on smaller tributaries, silver maple, and river birch. The sub-canopy may be sparse to moderately dense, consisting of canopy species as well as hornbeam (*Carpinus caroliniana*). Typical shrubs include spicebush and smooth alder (*Alnus serrulata*). On sites with a closed canopy, jewelweed, clearweed, false nettle, wood nettle (*Laportea canadensis*), stinging nettle (*Urtica dioica*), ostrich fern, wild germander (*Teucrium canadense*), jumpseed, Jack-in-the-pulpit, and green dragon are common. With a more open canopy, goldenrods (*Solidago* spp.), deer-tongue grass (*Panicum clandestinum*), marsh fern (*Thelypteris palustris*), wingstem (*Verbesina alternifolia*), and riverbank wild-rye (*Elymus riparius*) dominate the herbaceous layer. The shrub and herbaceous layers are often heavily impacted by non-native plant species such as multiflora rose, Morrow's honeysuckle, common privet, Japanese barberry, reed canary- grass (*Phalaris arundinacea*), Japanese stiltgrass, Japanese knotweed, dame's-rocket (*Hesperis matronalis*), and garlic-mustard.



**PHOTOGRAPH 4-4. Sycamore Forest at Southeastern End of Installation**

***Red Maple-Mixed Shrub Palustrine Woodland.*** This plant community occurs adjacent to the Marsh Run floodplain at Defense Distribution Center Susquehanna (see **Photograph 4-5**).

According to Zimmerman et al. 2012, this community type usually occurs on mineral soil with a thin layer of muck. The pH is somewhat acidic to circumneutral. Trees are sparse (10–60% cover) and generally less than 30 feet tall. Red maple dominates the canopy, sometimes with a mixture of other trees such as blackgum (*Nyssa sylvatica*), Eastern hemlock (*Tsuga canadensis*), eastern white pine (*Pinus strobus*), black willow, swamp white oak (*Quercus bicolor*), pin oak (*Q. palustris*), and black ash (*Fraxinus nigra*). The shrub layer is typically dense and includes silky dogwood, winterberry (*Ilex verticillata*), spicebush, smooth alder, silky willow (*Salix sericea*), swamp rose (*Rosa palustris*), and buttonbush (*Cephalanthus occidentalis*). Ferns usually dominate the herbaceous layer. Characteristic species include marsh fern, cinnamon fern (*Osmunda cinnamomea*), sensitive fern, crested wood fern (*Dryopteris cristata*), and royal fern

(*Osmunda regalis*). Other herbs include skunk-cabbage (*Symplocarpus foetidus*), beggar-ticks, jewelweed, and in wetter areas, arrow-arum, wapato, and marsh-marigold (*Caltha palustris*).

**PHOTOGRAPH 4-5. Emergent Vegetation within the Marsh Run Floodplain**

#### 4.7.1.2 Terrestrial Plant Communities

As previously discussed, descriptions of terrestrial types are from Fike (1999) and have not been updated in the 2nd edition. This version does not include vegetation types characterized by a high degree of direct human influence (e.g., roadsides, agricultural fields, lawns, forest plantations), nor does it include aquatic or subterranean communities. Therefore, the herbaceous openings along the southern perimeter road, that are frequently mowed/maintained, are not described.

***Red Maple (Terrestrial) Forest.*** This plant community occurs in several upland areas along the southern perimeter road at Defense Distribution Center Susquehanna.

According to Fike (1999), this community is generally an early-to mid-successional type that is becoming increasingly common as red maple increases in Pennsylvania's forests. This type is seldom pure, but red maple dominates the tree stratum. Associate species include oaks, sweet birch (*Betula lenta*), tulip poplar, hickories, white ash (*Fraxinus Americana*), wild black cherry (*Prunus serotina*), and other hardwoods. Some shrubs commonly present include maple-leaved viburnum (*Viburnum acerifolium*), spicebush, witch hazel (*Hamamelis virginiana*), and mountain laurel (*Kalmia latifolia*), black huckleberry (*Gaylussacia baccata*), and flowering dogwood (*Corpus florida*) (Abrams 1998).

***Tuliptree - Beech - Maple Forest.*** This plant community occurs in small pockets within the undeveloped area along the southern border of Defense Distribution Center, Susquehanna (see **Photograph 4-6**).

According to Fike (1999), this community occurs on fairly deep, not strongly acidic soils, at a mid- to lower-slope position. The most consistent tree species for this often very mixed type are red maple and tuliptree. American beech (*Fagus grandifolia*) is often present and, when present, is often codominant. In successional, lower slope situations, tuliptree may occur in nearly pure stands. The long list of possible associates includes various oaks, mostly red oak (*Q. rubra*), as well as black-gum, sugar maple, mockernut hickory (*Carya tomentosa*), shagbark hickory (*C. ovata*), sweet birch, eastern hemlock. Common shrubs include various viburnums, hornbeam, flowering dogwood, hop-hornbeam, witch-hazel, and spicebush. This type has different expressions in different parts of the state as well as according to disturbance history etc. There may be a rich herbaceous layer, especially in the vernal flora. On richer sites that are not over-browsed, this may include species like may-apple (*Podophyllum peltatum*), bloodroot (*Sanguinaria canadensis*), rattlesnake fern (*Botrychium virginianum*), dutchman's- breeches (*Dicentra cucullaria*), squirrel corn (*D. canadensis*), wild leek (*Allium tricoccum*), spring-beauty (*Claytonia virginica*) etc. (Pearson 1974).

### 4.7.2 Wildlife

During the 2015 surveys, twenty-seven (27) species of wildlife were observed at the installation. This wildlife community is generally comprised of species adapted to human development. **Table 4-3** presents the wildlife observed and identified during the 2008, 2012, and most recent 2015 surveys.

**PHOTOGRAPH 4-6. Tuliptree Terrestrial Forest with Disturbed Edge**

**TABLE 4-3. Wildlife Species Observed at Defense Distribution Center, Susquehanna During Surveys Conducted in 2008, 2012 and 2015.**

| Common Name | Scientific Name | Date of Observation | Status |
|---|---|---|---|
| **Birds** | | | |
| American crow | *Corvus brachyrhynchos* | 2008, 2012, 2015 | Game Species, MBTA |
| American goldfinch | *Carduelis tristis* | 2008, 2012, 2015 | MBTA |
| American kestrel | *Falco sparverius* | 2012, 2015 | MBTA |
| American redstart | *Setophaga ruticilla* | 2012 | MBTA |
| American robin | *Turdus migratorius* | 2008, 2012, 2015 | MBTA |
| Baltimore oriole | *Icterus galbula* | 2012 | MBTA |
| Bank swallow | *Riparia* | 2008 | MBTA |
| Barn swallow | *Hirundo rustica* | 2008, 2012 | MBTA |
| Belted kingfisher | *Megaceryle alcyon* | 2008 | MBTA |
| Black-billed cuckoo | *Coccyzus erythropthalmus* | 2008 | MBTA, BCC |
| Black-capped chickadee | *Poecile atricapilla* | 2008, 2015 | MBTA, BCC |

| Common Name | Scientific Name | Date of Observation | Status |
|---|---|---|---|
| **Birds (continued)** | | | |
| Blue-gray Gnatcatcher | *Polioptila caerulea* | 2012 | MBTA |
| Blue jay | *Cyanocitta cristata* | 2008, 2012 | MBTA |
| Brown-headed Cowbird | *Molothrus ater* | 2012, 2015 | MBTA |
| Brown thrasher | *Toxostoma rufum* | 2012 | MBTA |
| Canada goose | *Branta canadensis* | 2008, 2012, 2015 | Game Species, MBTA |
| Carolina chickadee | *Parus carolinensis* | 2012 | MBTA |
| Carolina wren | *Thryothorus ludovicianus* | 2008, 2012 | MBTA |
| Cedar waxwing | *Bombycilla cedrorum* | 2008, 2012 | MBTA |
| Chimney swift | *Chaetura pelagica* | 2012 | MBTA |
| Chipping sparrow | *Spizella passerina* | 2012 | MBTA |
| Common grackle | *Quiscalus quiscula* | 2008, 2012, 2015 | MBTA |
| Common yellowthroat | *Geothlypis trichas* | 2008, 2012 | MBTA |
| Downy woodpecker | *Picoides pubescens* | 2008, 2012, 2015 | MBTA |
| Eastern bluebird | *Sialia sialis* | 2012 | MBTA |
| Eastern kingbird | *Tyrannus tyrannus* | 2008, 2012, 2015 | MBTA |
| Eastern phoebe | *Sayornis phoebe* | 2012 | MBTA |
| Eastern towhee | *Pipilo erythrophthalmus* | 2008 | MBTA |
| Eastern wood pewee | *Contopus virens* | 2012 | MBTA |
| European starling | *Sturnus vulgaris* | 2012, 2015 | Unprotected |
| Field sparrow | *Spizella pusilla* | 2008 | MBTA |
| Fish crow | *Corvus ossifragus* | 2012 | MBTA |
| Gray catbird | *Dumetella carolinensis* | 2008, 2012 | MBTA |
| Great blue heron | *Ardea herodias* | 2008, 2012 | MBTA |
| Great egret | *Ardea alba* | 2008, 2012, 2015 | MBTA, PA-E |
| Green heron | *Butorides virescens* | 2008, 2012 | MBTA |
| Hooded warbler | *Wilsonia citrine* | 2008 | MBTA |
| House finch | *Carpodacus mexicanus* | 2008, 2012 | MBTA |
| House sparrow | *Passer domesticus* | 2012 | Unprotected |
| House wren | *Troglodytes aedon* | 2012 | MBTA |
| Indigo bunting | *Passerina cyanea* | 2008, 2012 | MBTA |
| Kildeer | *Charadrius vociferus* | 2012 | MBTA |
| Little blue heron | *Egretta caerulea* | 2012 | MBTA |
| Mallard | *Anas platyrhynchos* | 2008, 2012, 2015 | Game Species, MBTA |
| Mourning dove | *Zenaida macroura* | 2008, 2012, 2015 | MBTA |
| Northern cardinal | *Cardinalis cardinalis* | 2008, 2012, 2015 | MBTA |
| Northern flicker | *Colaptes auratus* | 2012 | MBTA |
| Northern mockingbird | *Mimus polyglottos* | 2008, 2015 | MBTA |
| Northern rough-winged swallow | *Stelgidopteryx serripennis* | 2008, 2012 | MBTA |
| Orchard oriole | *Icterus spurius* | 2012 | MBTA |
| Pileated woodpecker | *Drycopus pileatus* | 2012 | MBTA |
| Red-bellied woodpecker | *Melanerpes carolinus* | 2008, 2012 | MBTA |
| Red-eyed vireo | *Vireo olivaceus* | 2012 | MBTA |
| Red-tailed hawk | *Buteo jamaicensis* | 2008, 2012, 2015 | MBTA |
| Red-winged blackbird | *Agelaius phoeniceus* | 2008, 2012, 2015 | MBTA |
| Rock pigeon | *Columba livia* | 2012 | Unprotected |
| Scarlet tanager | *Piranga olivacea* | 2012 | MBTA |
| Song sparrow | *Melospiza melodia* | 2008, 2012, 2015 | MBTA |

| Common Name | Scientific Name | Date of Observation | Status |
|---|---|---|---|
| **Birds (continued)** | | | |
| Spotted sandpiper | *Actitis macularius* | 2008 | MBTA |
| Tree swallow | *Tachycineta bicolor* | 2008, 2012 | MBTA |
| Tufted titmouse | *Baeolophus bicolor* | 2012 | MBTA |
| Turkey vulture | *Cathartes aura* | 2008, 2012, 2015 | MBTA |
| Warbling vireo | *Vireo gilvus* | 2012 | MBTA |
| White-eyed Vireo | *Vireo griseus* | 2012 | MBTA |
| Willow flycatcher | *Empidonax traillii* | 2012 | MBTA |
| Wood duck | *Aix sponsa* | 2008 | MBTA |
| Wood thrush | *Hylocichla mustelina* | 2008, 2012 | MBTA, BCC |
| Yellow-throated vireo | *Vireo flavifrons* | 2012 | MBTA |
| Yellow warbler | *Dendroica petechia* | 2008, 2012, 2015 | MBTA |
| **Mammals** | | | |
| Common raccoon | *Procyon lotor* | 2008 | -- |
| Eastern cottontail | *Sylvilagus floridanus* | 2008, 2015 | -- |
| Eastern gray squirrel | *Sciurus carolinensis* | 2008, 2015 | -- |
| White-tailed deer | *Odocoileus virginianus* | 2008, 2015 | -- |
| Woodchuck | *Marmota monax* | 2008, 2015 | -- |
| **Reptiles & Amphibians** | | | |
| Common snapping turtle | *Chelydra serpentine* | 2008 | -- |
| Eastern painted turtle | *Chrysemys picta* | 2008, 2015 | -- |
| Green frog | *Rana clamitans* | 2008 | -- |
| **Invertebrates** | | | |
| Black swallowtail | *Papilio polyxenes* | 2008 | -- |
| Cabbage white | *Pieris rapae* | 2008 | -- |
| Clouded (common) sulphur | *Colias philodice* | 2008 | -- |
| Cloudless sulphur | *Phoebis sennae* | 2008 | -- |
| Common green darner | *Anax junius* | 2015 | -- |
| Common whitetail | *Libellula lydia* | 2008 | -- |
| Dogday cicada | *Tibicen linnei* | 2008 | -- |
| Eastern tailed blue | *Everes comyntas* | 2008 | -- |
| Eastern tiger swallowtail | *Papilio glaucus* | 2008 | -- |
| Ebony jewelwing | *Calopteryx maculata* | 2008 | -- |
| Hummingbird clearwing | *Hemaris thysbe* | 2008 | -- |
| Japanese beetle | *Popillia japonica* | 2008 | -- |
| Monarch | *Danaus plexippus* | 2008 | -- |
| Orange (alfalfa) sulphur | *Colias eurytheme* | 2008 | -- |
| Pearl crescent | *Phyciodes tharos* | 2008 | -- |
| Praying mantis | *Mantis religiosa* | 2008 | -- |
| Silver spotted skipper | *Epargyreus clarus* | 2008 | -- |
| Spicebush swallowtail | *Papilio troilus* | 2008 | -- |
| Summer azure (common blue) | *Celastrina neglecta* | 2008 | -- |
| Zebra swallowtail | *Eurytides marcellus* | 2008 | -- |

#### 4.7.2.1 Reptiles and Amphibians

Reptiles and amphibians, collectively known as herpetofauna, are a vital part of the ecosystem. Healthy populations of these species are necessary for maintaining diverse, functional ecosystems through control of insects and rodents and as prey for a variety of avian and mammalian species. The Partners in Amphibian and Reptile Conservation and the National Military Fish and Wildlife Association have made recommendations to control the intentional collection or translocation of herpetofauna and to document presence of captive or commercially purchased herpetofauna on military installations.

Common amphibian species identified on Defense Distribution Center, Susquehanna include the wood frog (*Rana sylvatica*), bullfrog (*Rana catesbeiana*), common gray treefrog (*Hyla versicolor*), Northern spring peeper (*Pseudacris c. crucifer*), green frog (*Rana clamitans*), American toad (*Bufo americanus*), Fowler's toad (*Bufo woodhousii fowleri*), redback salamander (*Plethodon cinereus*), and red-spotted newt (*Notophthalmus v. viridescens*). Common reptilian species likely to occur on Defense Distribution Center, Susquehanna include the northern copperhead (*Agkistrodon contortrix mokasen*), eastern garter snake (*Thamnophis s. sirtalis*), northern ringneck snake (*Diadophis punctatus edwardsii*), northern black racer (*Coluber c. constrictor*), northern water snake (*Nerodia s. sipedon*), common snapping turtle (*Chelydra serpentina*), and eastern painted turtle (*Chrysemys picta picta*). In addition, suitable habitat could exist on Defense Distribution Center, Susquehanna for several other Federal- or state-listed or rare herpetofauna, including the bog turtle *(Glyptemys muhlenbergii)*, federally listed as threatened and state-listed as endangered; the redbelly turtle (*Pseudemys rubriventris*), state-listed as threatened; the eastern spadefoot toad *(Scaphiopus h. holbrooki)*, state-listed as endangered; and the timber rattlesnake *(Crotalus horridus)*, a candidate for listing in the Commonwealth of Pennsylvania. **Photograph 4-7** shows eastern painted turtles in Marsh Run Pond.

**PHOTOGRAPH 4-7. Painted Turtle on a Log in Marsh Run**

#### 4.7.2.2 Birds

Bird populations in the region are plentiful, but detailed avifauna surveys have never been conducted on Defense Distribution Center, Susquehanna. A list of birds that occur on or migrate through Defense Distribution Center, Susquehanna is included in **Appendix E**.

As part of the "Cerulean Warbler Occurrence Atlas for Military Installations," a large-scale project of the Legacy Resource Management Program, field surveys were conducted at Defense Distribution Center, Susquehanna. The field staff did not document any cerulean warblers. This was the third and final year of the Cerulean project (DOD PIF 2011). Reports from the previous years can be found at the following link:

<https://www.dodlegacy.org/Legacy/intro/ProductsList_NU.aspx>

Reports and factsheets can be found under 09-429 and 10-429 in the "natural resources" tab. The final report, 11-429, was submitted in December 2012.

***Passerines and Others.*** The most abundant passerine birds in the area include the mourning dove, eastern king bird (*Tyrannus tyrannus*), blue jay (*Cyanocitta cristata*), American crow (*Corvus brachyrhynchos*), American robin (*Turdus migratorius*), red-winged blackbird (*Agelaius phoeniceus*), black-capped chickadee (*Poecile atricapilla*), bobolink (*Dolichonyx oryzivorus*), eastern phoebe (*Sayornis phoebe*), and brown thrasher (*Toxostoma rufum*). Common seasonal granivores (i.e., seed eaters) present on the installation include the eastern meadowlark (*Sturnella magna*), horned-lark (*Eremophila alpestris*), field sparrow (*Spizella pusilla*), and savannah sparrow (*Passerculus sandwichensis*). European starlings, house sparrows (*Passer domesticus*), rock doves (*Columba livia*), and house finches (*Carpodacus mexicanus*) are also common.

***Wading Birds.*** Common wading birds that might occur on or adjacent to the installation include the great blue heron (*Ardea herodias*), little blue heron (*Egretta caerulea*), and green heron (*Butorides virescens*). A great blue heron was observed during the site visit.

***Shorebirds.*** Common shorebirds that might occur on, or adjacent to, the installation include the killdeer, herring gull (*Larus argentatus*), ring-billed gull (*Larus delawarensis*), and great black-backed gull (*Larus marinus*).

***Waterfowl.*** Common waterfowl species that might occur on, or adjacent to, the installation include the mallard (*Anas platyrhynchos*), Canada goose (*Branta canadensis*), black duck (*Anas rubripes*), and wood duck (*Aix sponsa*). See **Photograph 4-8** for a photograph of Canada geese in the open mowed field adjacent to the road.

***Raptors.*** Common raptor species that might occur on, or adjacent to, the installation include the red-tailed hawk, great horned owl (*Bubo virginianus*), and the eastern screech owl (*Otus asio*).

**PHOTOGRAPH 4-8. Canada Geese in Mowed Field Adjacent to Road**

#### 4.7.2.3 Mammals

Mammal species known to occur on the installation are resistant or have adapted to human development and activities that impact the natural resources of the area. **Appendix E** lists the mammal species that occur on or in the vicinity of Defense Distribution Center, Susquehanna.

***Carnivores.*** Coyote (*Canis latrans*) and red fox (*Vulpes vulpes*) are the most common mammalian predators at Defense Distribution Center, Susquehanna. Other species that might occur within the local area, or on Defense Distribution Center, Susquehanna, are gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*), mink (*Mustela vison*), and river otter (*Lontra canadensis*).

***Omnivores.*** Black bear (*Ursus americanus*) are unlikely to occur on the installation but are present in the surrounding areas. Omnivorous small mammals such as raccoon (*Procyon lotor*) and striped skunk (*Mephitus mephitis*) are very abundant on the installation due to their generalist ecological niche.

***Ungulates.*** A small managed herd of white-tailed deer (*Odocoileus virginianus*) are the only ungulates that exist on Defense Distribution Center, Susquehanna and were observed during the INRMP site visit (see **Photograph 4-9**). A hunt is conducted every year to help keep this small herd healthy and sustainable.

***Small Mammals.*** Small mammals likely to occur on or in the vicinity of Defense Distribution Center, Susquehanna include beaver (*Castor canadensis*), woodchuck (*Marmota monax*), eastern gray squirrel (*Sciurus carolinensis*), southern flying squirrel (*Glaucomys volans*), eastern chipmunk (*Tamias striatus*), eastern cottontail (*Sylvilagus floridanus*), and white-footed mouse

(*Peromyscus leucopus*). Evidence of beaver foraging and dams were observed during the INRMP site visit.

**PHOTOGRAPH 4-9. White-tailed Deer Adjacent to Road near Landfill**

#### 4.7.2.4 Fish

Marsh Run Creek drains into the Susquehanna River and fish that occur in this watershed have the potential to occur on Defense Distribution Center, Susquehanna. Typical fish species in Defense Distribution Center, Susquehanna waters include gizzard shad (*Dorosoma cepedianum*), largemouth bass (*Micropterus salmoides*), pumpkinseed (*Lepomis gibbosus*), carp (*Cyprinus carpio*), and rainbow trout (*Oncorhynchus mykiss*). The small man-made fishing pond in the southwestern portion of Defense Distribution Center, Susquehanna is stocked with rainbow trout on a seasonal basis for youth fishing only.

#### 4.7.2.5 Wildlife and Fisheries Habitat

Wildlife and fisheries habitat on Defense Distribution Center, Susquehanna is limited because 681 acres of the installation lands are developed. The remaining 167 acres are undeveloped and consist of a 32-acre pond and approximately 135 acres of secondary growth forest. These undeveloped areas are in the Marsh Run Pond and Marsh Run Creek floodplain and adjacent woodlands.

The secondary growth forest supports upland and forest-dwelling bird species. The mixed deciduous woods provide a substantial food supply for browsing mammals, including white-tailed deer, beaver, rabbit, gray and southern flying squirrels, and eastern chipmunk. Grassland communities support large populations of small mammals and groundnesting birds, such as the eastern meadowlark, Savannah sparrow, and horned lark (*Eremophila alpestris*).

The wetland communities, the predominant undeveloped habitat on Defense Distribution Center, Susquehanna, include nontidal emergent wetlands around the perimeter of Marsh Run Pond, Marsh Run Creek, unnamed perennial and intermittent tributaries that feed the pond and creek, various isolated seep pockets, and forested wetlands in the southern portion of the installation. These wetlands, especially the wooded and open wetland areas, provide cover and breeding habitat for amphibian and reptilian species. Wetlands are also the preferred habitat for most of the freshwater wading bird and waterfowl populations. Most of the wading bird and waterfowl species tend to select habitat based on such factors as water depth, substrate type, prey type, prey availability, and vegetative cover. The wetlands on Defense Distribution Center, Susquehanna provide habitat for beaver and other semi-aquatic mammalian species, such as the muskrat (*Ondatra zibethicus*) and southern bog lemming (*Synaptomys cooperi*).

The wooded areas on Defense Distribution Center, Susquehanna support significant populations of upland mammalian and forest-dwelling bird species. The mixed deciduous woods on the installation provide a substantial food supply for browsing mammals. Deer feed on buds and young leaves of saplings within their reach, especially aspen, and on the acorns shed by oak trees. Beavers, rabbits, and other small mammals feed on the bark, twigs, and leaves of the trees present. Gray squirrels, eastern chipmunk, and southern flying squirrels are also provided feeding and cover habitat in the wooded areas on the installation.

Grassland communities, a small portion of the available undeveloped habitat on the installation, support ground-nesting birds, such as the eastern meadowlark, Savannah sparrow, and horned lark. In addition, the grassland habitat also supports large populations of small mammals, which provide an abundant food supply for foraging raptors and carnivorous mammalian species.

The fisheries habitat on the installation consists of 32-acre Marsh Run Pond, Marsh Run Creek, a small spring-fed trout pond that drains into Marsh Run Creek, and several unnamed tributaries that primarily drain the northern portion of Defense Distribution Center, Susquehanna. Marsh Run Creek and the unnamed tributaries drain into the Susquehanna River on the northeast side of Defense Distribution Center, Susquehanna and fish species that occur in the river might use Marsh Run Creek and the northern tributaries for feeding or spawning. Marsh Run Creek and the northern tributaries appear to have a relatively continuous flow and fair water quality that attribute a moderate value to these waterways in relation to their ability to support aquatic species.

#### 4.7.2.6 Game Management

Only active-duty military assigned to Defense Distribution Center, Susquehanna and their dependents, civilian personnel currently employed at Defense Distribution Center, Susquehanna and their dependents, military personnel and civilians and their dependents of tenant organizations, retired military, and Defense Distribution Center, Susquehanna residents are permitted to hunt on the installation. Hunting of white-tailed deer, waterfowl, mourning dove, cottontail rabbit, gray squirrel, red squirrel (*Tamiasciurus hudsonicus*), ring-necked pheasant (*Phasianus colchicus*), and bobwhite quail (*Colinus virginianus*) is managed primarily in the vegetated corridor surrounding Marsh Run Creek and Pond. The wildlife is managed to reduce damage to natural resources from overpopulation while sustaining viable populations. All hunters and anglers must report to Security Police Headquarters to obtain the proper permits. All participants must possess a valid state license and required stamps. All PAGC regulations pertaining to firearms apply.

DODI 4715.03 states that DOD components shall coordinate with appropriate agencies to enforce Federal and state laws and regulations within their jurisdiction. The 2006 Memorandum of Understanding (MOU) between DOD, USFWS, and the states notes that USFWS agrees to the following:

1. Provide technical assistance to DOD in managing Federal trust resources such as endangered species, migratory birds, interjurisdictional fisheries, invasive species, contaminants, wetlands, coastal resources, law enforcement, or other natural resources issues within the scope of USFWS responsibilities, funding constraints, and expertise.
2. Provide law enforcement support to protect fish, wildlife, and plant resources on military installations within the jurisdiction of USFWS.

A fishing program is managed at Marsh Run Pond. In addition, a small man-made fishing pond in the southwestern portion of Defense Distribution Center, Susquehanna is stocked with rainbow trout on a seasonal basis for youth fishing only. Juvenile anglers are not required to purchase a state fishing license and are permitted to fish at Defense Distribution Center, Susquehanna. All fees collected from participation in outdoor recreation programs are used to support those programs. Non-motorized boats are allowed on Marsh Run Pond.

### 4.7.3 Wetlands and Wetland Mitigation

Wetlands are defined in Federal regulations as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.” Section 404 of the CWA (33 U.S.C. 1344) requires that all discharges of dredged and fill material in the waters of the United States, including wetlands, must meet USEPA’s 404(b)(1) guidelines (40 CFR 230) and obtain water quality certification from the state (33 U.S.C. 1341). Wetlands are also protected by EO 11990, *Protection of Wetlands.*

In 1997, the USACE Baltimore District (CENAB) performed a delineation of waters of the United States, including jurisdictional wetlands, on the installation. Ten wetland areas constituting 95.35 acres were identified in the southern portion of the facility adjacent to Marsh Run Creek (USACE 1998) (see **Photograph 4-10**). At the headwater area of Marsh Run Creek, the wetlands are emergent marshes with extensive stands of cattails (*Typha* sp.) and other wetland plant species, including sweet flag (*Acorus calamus*) and elderberry (*Sambucus canadensis*). The riparian area along Marsh Run Creek below Marsh Run Pond was documented as emergent marsh and palustrine forested wetland with stands of red maple. The Jurisdictional Determination Letter from the Regulatory Branch of the CENAB for the 95.35 acres of wetlands expired on June 6, 2002.

In 2006, two additional jurisdictional wetlands were delineated by the CENAB. An approximately 0.5-acre palustrine emergent (PEM) wetland was delineated near the northeastern corner of Sixth Street and Marsh Run Road, and an approximately 0.1-acre PEM wetland was identified near the northwestern corner of the two roads, increasing the total acreage of wetlands on Defense Distribution Center, Susquehanna to 95.95 acres . Both wetlands are independently collected by a storm sewer system that discharges into Marsh Run Creek. The area to the south is a capped sanitary landfill area planted in upland vegetation. This wetland is dominated by wetland species such as broadleaf cattail (*Typha latifolia*) and soft rush (*Juncus effusus*), and eventually transitions

into a narrow palustrine scrub-shrub wetland before ending in a swale approximately 525 feet east of the Marsh Run Road/Sixth Street intersection. This swale continues eastward for approximately 610 feet before discharging into an enclosure under the sanitary landfill area that eventually drains to wetlands along Marsh Run (USACE 2006).

**PHOTOGRAPH 4-10. Wetland Associated with Marsh Run**

The CENAB delineated waters of the United States were re-delineated in several locations. The wetland boundary associated with Solid Waste Management Units 2 and 4 (and landfill closure) was re-delineated in 2005 due to slumping and erosion of the landfill into the Marsh Run wetland complex. Minor modifications were made to linear swale/ditch/stream features along the southern property boundary that were surveyed in 1997. There appears to have been an expansion of a storm water basin (and wetlands) at the northwest corner of Normandy Drive and 3rd Street which was delineated in 2007. Additional wetlands identified by CENAB in an area on the north side of Marsh Run Road associated with Sixth Street were delineated in 2007. A jurisdictional determination was issued by CENAB for these wetlands in February 2008 (NAB-2008-03338-PO2). **Figure 4-2** shows the approximate boundaries of jurisdictional wetlands identified in the 1997 delineation by CENAB and the jurisdictional wetlands identified in the 2005 and 2007 delineations by Weston Solutions.

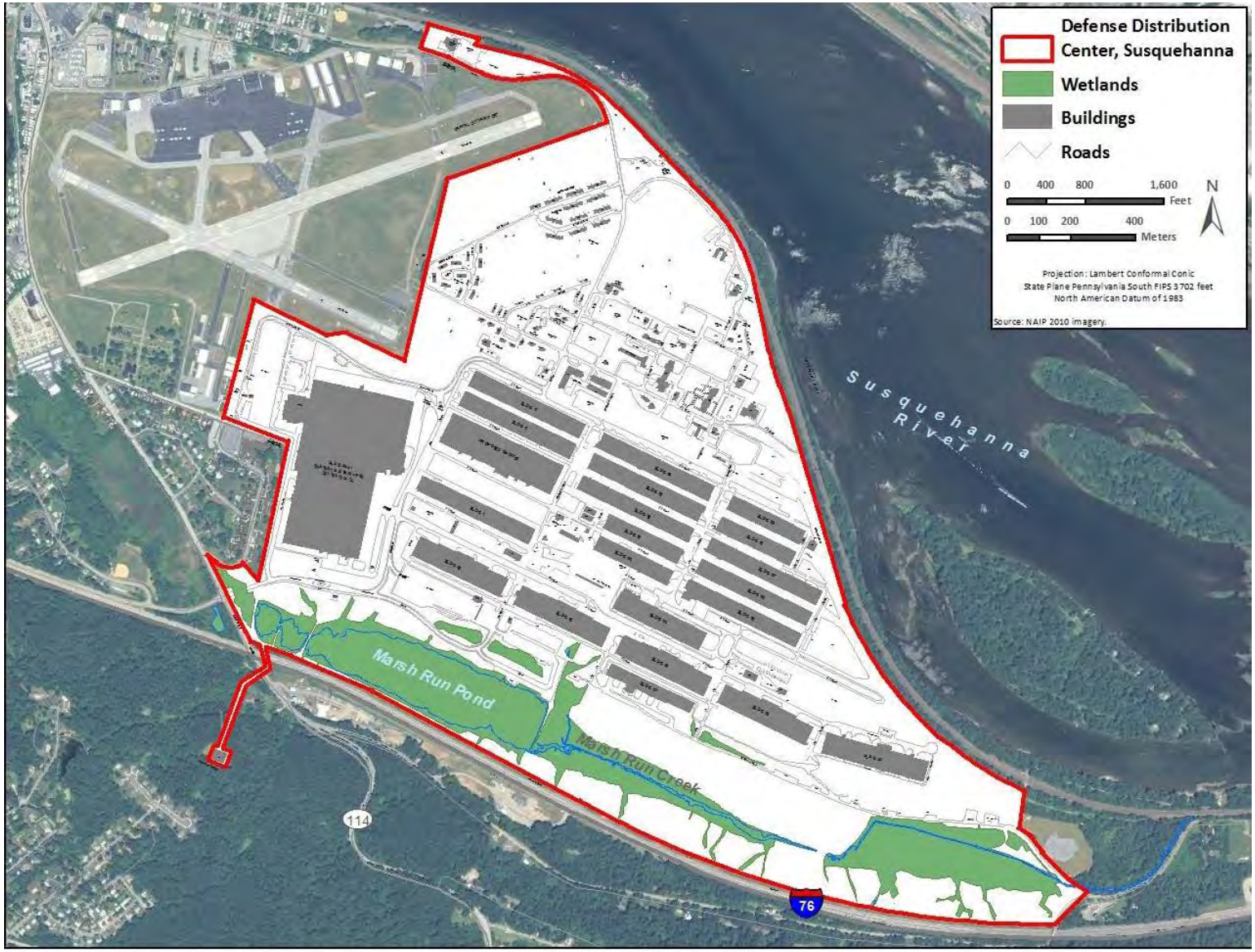



**FIGURE 4-2. Wetlands on Defense Distribution Center, Susquehanna**

## Wetland Mitigation Projects

Three wetland mitigation projects are in various stages of completion, implementation, and monitoring on Defense Distribution Center, Susquehanna. The following provides a list of those projects (see **Figure 4-3**):

- Base Realignment and Closure (BRAC) General Purpose Warehouse (GPW) Project
- Access Control Point 4 (ACP-4) Project
- MS4 Restoration and BMP Design and Construction Project (MS4 Project)

The CENAB authorization letters for each of the Projects, include a Special Condition of the permit authorizations that is specific to the contents of this INRMP and reads:

> *"The permittee shall provide long term protection for the compensatory wetland mitigation site through a management plan. In accordance with 33 CFR Part 332.7(a)(3), the plan must contain a provision requiring 60-day advance notification to the District Engineer before any action is taken to void or modify the management plan, including transfer of title to, or establishment of any other legal claims over the compensatory mitigation site. Additionally, 33 CFR part 332.7(a)(4) requires that for compensatory mitigation projects on public lands, where federal facility management plans or integrated natural resource management plans are used to provide long term protection, and changes in statute, regulation or agency needs or mission results in an incompatible use on public lands originally set aside for compensatory mitigation, the public agency authorizing the incompatible use is responsible for providing alternative compensatory mitigation that is acceptable to the District Engineer for any loss in functions resulting from the incompatible use. The permittee shall incorporate the management plan providing long-term protection to the compensatory wetland mitigation site into the Defense Distribution Depot Susquehanna, Pennsylvania Integrated Natural Resources Management Plan (INRMP) during the next formally scheduled revision. A copy of the final revised INRMP incorporating the Corps approved management plan shall be provided to the Baltimore District within 60 days after finalization and submitted prior to performing work authorized by these permit verifications. Failure to comply with this special condition may result in a non-compliance of the compensatory wetland and stream mitigation project(s) shall be the responsibility of the permittee."*

The installation is committed to ensuring this responsibility is fulfilled. This INRMP review, signified by highlights and strikethrough text, provides for long term protection to the compensatory wetland mitigation projects described herein.

### *BRAC GPW Wetland Mitigation Project*

The BRAC GPW Project permits were issued by CENAB [CENAB-OP-RPA-2008-00299-P02 under the Pennsylvania Statewide Programmatic General Permit (PASPGP) - 3] and PADEP Water Obstruction and Encroachment Permit (E67-859) in 2008 authorizing the filling of wetlands for construction of the BRAC GPW Project. In 2015, a remedial measures plan for the BRAC GPW construction was approved by CENAB and York County Conservation District (YCCD) to correct non-compliance issues for Special Conditions 1 and 5. The Project is located adjacent to Marsh Run. See **Appendix G.1** for Project regulatory correspondence.

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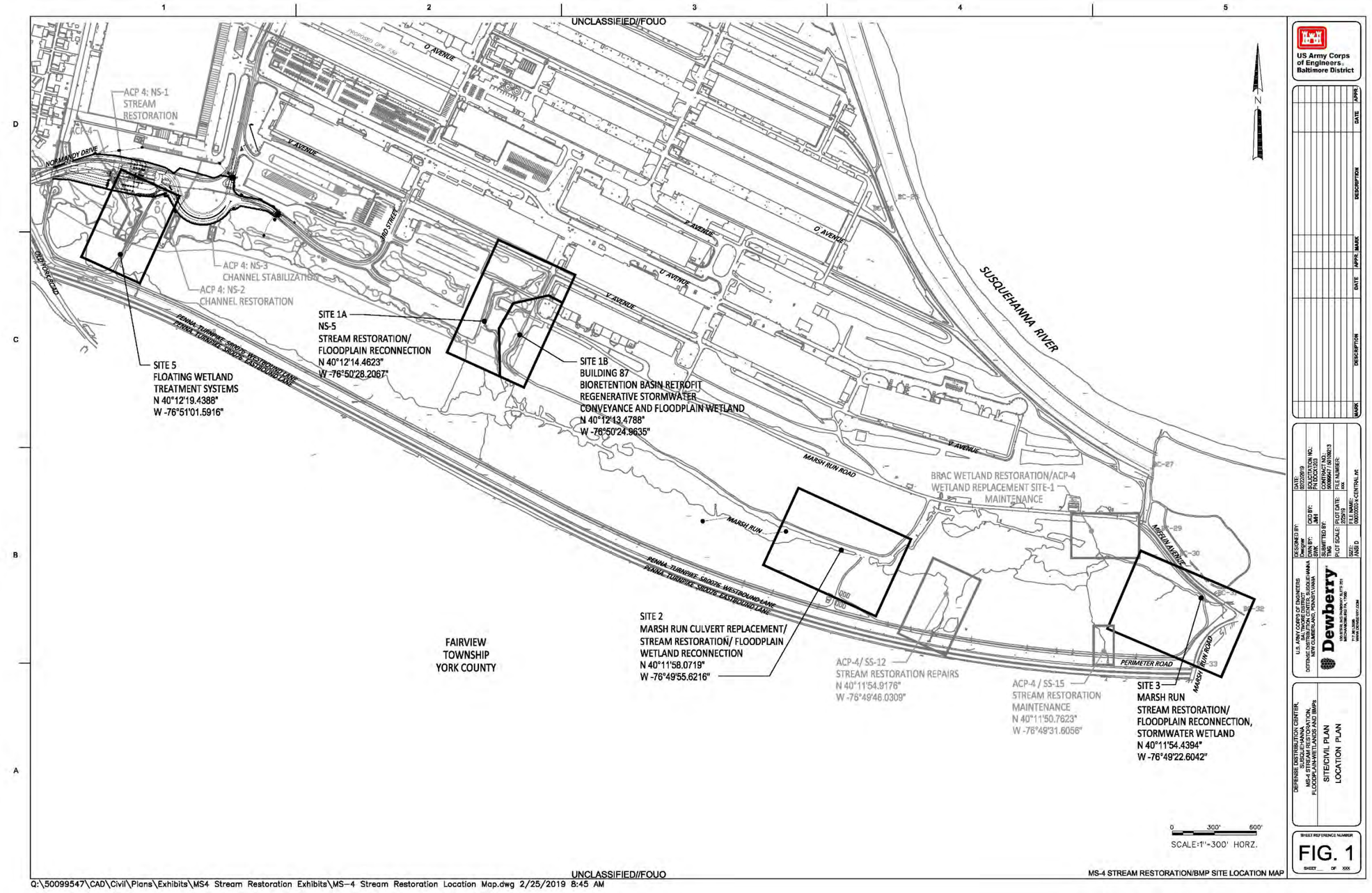


**FIGURE 4-3. Wetland Mitigation Projects on Defense Distribution Center, Susquehanna**

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The approved wetland mitigation for the BRAC GPW Project involved the construction of approximately 0.78 acres of palustrine emergent wetlands in an upland field within the Marsh Run floodplain (adjacent to Marsh Run) and proximate to the Project area. The construction and planting of the wetland mitigation area occurred from 20 April 2009 through 17 September 2009. The wetland mitigation conditions required five years of monitoring and invasive plant species management to promote the establishment of a self-sustaining wetland ecosystem. The wetland mitigation area and a reference wetland were inspected twice per year; once in the beginning of the growing season and once towards the end of the growing season from 2010 to 2014. The inspections were documented as monitoring and inspection reports which were submitted per the Project permits and authorizations.

The installation received a non-compliance letter from the CENAB dated April 23, 2014 (**Appendix G.1**). The letter contained notification that after CENAB review of the monitoring reports and as a result of compliance inspections performed on May 31, 2012 and December 19, 2013, CENAB determined that the permit condition to establish 85 percent vegetative cover in the wetland mitigation area had not been achieved. The failure to establish the cover was likely due to the overabundance of carp that were introduced into the mitigation site during multiple flooding events. As a result, CENAB requested that a remedial plan be prepared in accordance with Special Condition 7 of the PASPGP-3 verification letter and additional monitoring reports were required until the conditions were met for vegetative cover.

The remedial measures to address the non-compliance issue for the BRAC GPW were submitted in conjunction with the mitigation plans for the compensatory wetland and stream mitigation ACP-4 Project, which was approved by CENAB on January 8, 2015 (see **Section 4.7.4**). However, the proposed implementation coordination of the two mitigation Projects was not possible; therefore, on March 20, 2017, a revised BRAC Wetland Restoration Plan, titled *DDC Susquehanna BRAC Wetland Restoration and Erosion and Sediment Control Plans, Fairview Township, York County* was submitted by the installation. The CENAB approved the Plan on April 19, 2017 and the YCCD also approved the revised plan in a letter dated April 27, 2017 (**Appendix G.1**).

The revised restoration plan as-built surveys to convert 0.564 acres of palustrine open water to palustrine emergent march were completed along with wetland restoration final grading, planting, and fencing in November 2017. Monitoring and implementation of the remediation measures at the mitigation site is required per the Project permit until 2022. The monitoring site visits and reports are undertaken and developed in conjunction with the ACP-4 Project when appropriate.

Corrective actions ~~may be~~ were required and ~~may be~~ were performed ~~during activities~~ to provide compensation for unavoidable wetlands impacts from the proposed ACP-4 Project in an area adjacent to the existing constructed wetland site. The BRAC GPW Remediation Plan was submitted on March 20, 2017, and approved by CENAB on April 17, 2017 (Appendix G.1). Permit stipulations, BMPs, and requirements in the Remediation Plan were incorporated in installation goals, objectives, and actions in **Section 5** and summarized in the revised **Table C-1**, **Appendix C**.

~~Of the 0.83-acre mitigation site, the inundated area was measured to be approximately 0.61 acres in 2013. The remaining 0.22 acres within the mitigation site is the fringe of PEM established~~

around the inundated area. DLA provided the contractor with a copy of sections of a *Final Wetlands Mitigation Plan* for the ACP Project, which requires 0.22 acres of wetlands mitigation. The proposed location of the mitigation for this new project is adjacent to the existing mitigation site for the GPW Project. Construction of the ACP Project mitigation area is anticipated to occur within the next year, and it would be optimal to combine the two projects by adding fill to the inundated area in conjunction with the project to mitigate impacts from the ACP Project.

Conceptual Remedial Plan

The following actions are recommended to reconfigure the GPW mitigation area and allow establishment of the required 0.78 acres of PEM wetlands habitat with 85% vegetative cover:

1. Widen the hydraulic connection between Marsh Run Creek and the wetland mitigation area. It is hypothesized that the narrow, well-established channel creates high velocities during flooding and draining of high backwater events from Marsh Run Creek. A wider opening would allow the flood waters to access and retreat from the mitigation area at slower rates and allow the mitigation site to act as part of the overall floodplain.

2a. Introduce fill material into the existing standing water using a long reach excavator accessing the site using temporary mats. The measured area of standing water in 2013 was 0.61 acres. Assuming a required average depth of fill of six inches, based on the 24 June 2014 measurement of 13.2 inches of water in the deepest part of the mitigation area, filling in the existing standing water area would require approximately 600 cubic yards of fill material. The fill would bring the grade of the wetlands mitigation site approximately level with the adjacent reference wetland and prevent the large area of ponded water. Plant wetlands species plugs in accordance with the original Wetlands Mitigation Plan planting details for Planting Zone A (1,000 plugs) with additional application of seed, rhizome cuttings, and live stakes of selected wetlands species.

2b. Alternatively, fill material could be added to the existing standing water area to reduce the depth of water to less than six inches throughout and provide several islands with a maximum elevation of 294.0 ft. Mitigation plantings for the shallow water area should be selected from obligate emergent species that are more resistant to carp (with large rhizomes or root systems) such as:

*Acorus calamus* (sweetflag)

*Iris versicolor* (yellow iris)

*Nuphar advena lutea* (spatterdock)

*Saururus cernuus* (lizard's tail)

*Peltandra virginica* (arrow arum).

Material from the excavation to widen the hydraulic connection between Marsh Run Creek and the mitigation area can be used as fill. Additionally, material from the proposed mitigation area to be established for the ACP can be used, minimizing earth moving and soil transport requirements. Care should be taken to minimize disturbance of the established PEM wetland fringe around the inundated area. Biodegradable coir logs should be employed to contain the fill material and

~~provide a barrier to carp, although carp will most likely access the area during any flood event that exceeds the top elevation of the coir logs.~~

~~The fill volume and number of plantings can be reduced based on decisions from the CENAB regarding consideration of the success of the long-term *Phragmites* management plan in the reference wetland. During the 31 May 2012 compliance inspection, the CENAB suggested partially filling in the inundated area with islands. Fill above the existing elevation of the established PEM fringe is not recommended.~~

~~3. Continue invasive plant control efforts. Additional application of herbicide (backpack sprayer or wipes) to emerging common reed in the mitigation footprint and adjacent wetland area will be implemented to persistent individuals within the mitigation area footprint. Manual removal of mile-a-minute weed is recommended. Mowing along Marsh Run Road most likely prevented mile-a-minute located in the mowed area from spreading, although it is also located farther away from the road than the mower was able to reach. Biologic control of mile-a-minute, specifically deployment of a stem-boring weevil (*Rhinoncomimus latipes*), is currently being investigated by DLA.~~

*ACP-4 Wetland and Stream Restoration*

The ACP-4 Project's Federal, state, and local permits and authorizations were issued by CENAB (CENAB-OP-RPA-2012-01159-P02 under PASPGP-4), PADEP Water Obstruction and Encroachment Permit (E67-913), and YCCD approved the Project *Erosion and Sediment Pollution Control Plan*. The purpose of the ACP-4 Project is to ensure the ACP is compliant with DOD Anti-Terrorism/Force Protection Criteria and the Army Access Control Points Standard Design/Criteria. The Project permanently impacted wetlands and stream channels associated with tributaries and adjacent wetlands to Marsh Run. See **Appendix G.2** for Project regulatory correspondence.

The approved ACP-4 construction resulted in permanent impacts to 0.11 acres of forested wetlands and 0.21 acre (513 linear feet) and temporary impact of 0.094 acres of wetlands and 0.37 (1,020 linear feet) of stream channels in unnamed tributaries to, and wetlands adjacent to, Marsh Run. The ACP-4 mitigation consisted of 0.22 compensatory wetland mitigation replacement on a 0.32-acre site and 1.48 acres (600 linear feet) of stream restoration.

The implementation of the mitigation Project occurred from late 2015 to March 2016. And an expansion of 0.01 acre of the palustrine forested wetland onto the previously constructed replacement wetland, which had been reserved for access into the adjacent BRAC wetland, was completed in late November 2017. The wetland mitigation conditions require five years of monitoring and invasive plant species management to promote the establishment of a self-sustaining wetland ecosystem, resulting in monitoring reports and adaptive management implementation. Approval for permit conditions achievement would be obtained at the end of year five of monitoring (2020) upon submission and review of the fifth-year final monitoring report. The monitoring site visits and reports were undertaken and developed in conjunction with the BRAC GPW Project when appropriate. A detailed description of the ACP-4 wetland and stream mitigation can be found in **Appendix G.2** as an attachment to the consultation package dated July 24, 2019.

Permit stipulations, BMPs, and requirements have been incorporated in installation goals, objectives, and actions as reflected into **Section 5** as well as **Table C-1**, **Appendix C**.

*MS4 Stream Restoration and Best Management Practice Design and Construction Project*

The purpose of the MS4 Project is to fulfill sediment and nutrient Bay total maximum daily load (TMDL) reductions according to the installation's *CBPRP* (DLA 2018a) *and Installation MS4 Stormwater Management Plan* (DLA 2018b) as stipulated by the installation's NPDES MS4 permit. The Project for pollutant reduction credits is planned for phased construction beginning in 2020. The site-specific generated sediment and nutrient TMDL reduction credits were calculated in accordance with the guidance for Chesapeake Bay sediment nitrogen and phosphorus pollutant reduction credit value requirements. Collected data used in calculating sediment rates are to serve as a baseline for monitoring the proposed stream restorations during post-construction inspections to verify that the expected pollutant reduction rates are achieved.

The MS4 Project consists of developing and implementing stream restoration and floodplain reconnections as well as creating and enhancing existing (and prior-filled) floodplain wetlands to achieve the reductions. The Project consists of multiple sites to achieve its purpose as follows:

- Site 1 (A and B) – stream, floodplain-wetland restoration and step-pool stormwater conveyance
    - 1A – drainage feature that is a stormwater outfall driven system with baseflow (regulated as Waters of the U.S.)
    - 1B – dry swale stormwater discharge that is a stormwater outfall driven system
- Site 2 – culvert replacement, stream and forested floodplain-wetland restoration
- Site 3 – stream and forested floodplain-wetland restoration
- Site 4 (A and B) – ACP-4 stream adaptive management maintenance repairs covered under the conditions of approval for the previously permitted and approved ACP-4 Project mitigation and restoration plan by both CENAB and PADEP; prescribed repairs were completed in late May 2020
- Site 5 (A and B) – two floating wetland treatment systems to be placed north of the existing Marsh Run Basin drainage pipe as well as in the Marsh Run open water pond (EA6703219-001 Authorization Waiver #16 permit approval); the systems do not involve impacts to wetlands or waters
- Site 6 – ACP BMP-1 supplemental runoff capture from existing parking areas through an inlet diversion into an existing BMP-1, constructed under the ACP BMP implementation (covered by the ACP Project NPDES Permit)

Work at Sites 4, 5, and 6 was completed because the actions either did not require permitting or were covered under existing permits, as referenced above. Sites 1A, 1B, 2, and 3 required additional coordination and permitting. For these sites, a CENAB Permit (NAB-2019-00189-P02 under PASPGP-5), PADEP General Permit (GP116703219-024), Nationwide Permit No. 27 authorization, PADEP Water Obstruction and Encroachment Environmental Assessment and Restoration Waiver authorization (EA6703219-001), and YCCD approval of the installation *Erosion and Sediment Control Plan* were issued for the MS4 Project to authorize stream and wetland restoration activities to achieve MS4 pollutant reduction for Chesapeake Bay TMDL

credits per the installation *CBPRP* (DLA 2018a) *and Installation MS4 Stormwater Management Plan* (DLA 2018b).

Permitting requirements for these stream restoration and floodplain wetland improvement activities involved the identification and delineation of wetlands and waters of the U.S. Additional delineations were performed along stream reaches in the Project areas, since current conditions for wetlands and streams were no longer consistent with the prior preliminary jurisdictionally determined boundaries prepared by the DLA in 2008 and approved by the USACE in 2009. In many cases for instance, channel incision and lowering of the channel invert resulted in a lowered water table adjacent to the impaired channels and draining of the riparian fringe wetlands associated with and located in and along portions of the impaired channel.

Additionally, Sites 2 and 3 required coordination with USFWS to ensure proper avoidance measures were in place to avoid the risk of killing or injuring bog turtles (*Clemmys muhlenbergii*) (USFWS Project #2019-0647 and PNDI Review #662797). Details for bog turtle surveys, regulatory consultation and avoidance measures are provided in **Section 4.8.1** as well as **Appendix G.3**.

See **Appendix G.3** for Project regulatory correspondence. Permit stipulations, BMPs, and requirements are listed at the front of **Appendix G.3** and incorporated into installation goals, objectives, and actions as reflected in **Section 5** and summarized in the revised **Table C-1**, **Appendix C**.

### 4.7.4 Exotic and Invasive Species

Surveys for invasive and nonnative plant and vertebrate species were conducted at the Defense Distribution Center Susquehanna from July 29 to August 1, 2008, to develop an invasive and nonnative plant and animal management plan for the installation.

There were 30 invasive and nonnative plant species observed during the survey on Defense Distribution Center, Susquehanna. One of these species, the mile-a-minute weed (*Polygonum perfoliatum*), is listed on the Federal Noxious Weed List. Federal agencies are required to eradicate species on this list. Eight of these species are listed on the Pennsylvania Noxious Weed Control List while nineteen of the documented species are listed on the PADCNR Invasive Plant List (**Table 4-4**).

Based on the 2015 vegetation and wildlife surveys, areas around the GPW mitigation wetland experienced re-growth of common reed that has been managed in recent years. A phragmites management effort is ongoing in the GPW wetland mitigation site (see **Photograph 4-11**). Phragmites in this area was first treated with herbicides during 2009 and treatment continued through the 2013 growing season. The herbicide application has been effective in eliminating this species from the area. Observations during site visits in 2013 found minimal emergence of phragmites, which was restricted to locations along the northern edge along Marsh Run Road where it was successfully treated.

Invasive plant management is a requirement for all three of the wetland mitigation Projects described in **Section 4.7.3**. **Table 4.4** has been updated to reflect the invasive plant species relevant to the wetland projects not previously identified on the installation. Additionally, Project-

specific invasive plant monitoring and management actions are listed in **Section 5** and summarized in the revised **Table C-1**, **Appendix C**.

**PHOTOGRAPH 4-11. Phragmites Management Area Adjacent to GPW Mitigation Wetland**

In the large open field area along the South Perimeter Road, giant foxtail (*Setaria faberi*) and mile-a-minute weed were documented amongst other herbaceous species typical of these sites on the installation. Japanese honeysuckle (*Lonicera japonica*), tree-of-heaven (*Ailanthus altissima*), oriental bittersweet (*Celastrus orbiculatus*), and garlic mustard have also been observed in the disturbed woodlands and along the forest edges.

The bagworm (*Thyridopteryx ephemeraeformis*) was observed on several trees along the southern perimeter of Marsh Run Pond (see **Photograph 4-12**). The bagworm is a perennial insect pest of arborvitae, juniper, pine, spruce, and certain deciduous trees. The bagworm is most common in southern regions of Pennsylvania.

Monitoring for the presence of invasive or nuisance species should continue. Treatment of the mile-a-minute weed with herbicide or corn gluten to prevent germination in the spring is recommended. Manual removal of the matted vines during the fall season may be beneficial by removing some of the seed stock. If addressed in the IPMP, biological control of mile-a-minute weed can be attempted by introducing the mile-a-minute weevil (*Rhinoncomimus latipes*), a weevil introduced from Asia specifically to feed on the leaves of the weed as an adult and stems as larvae. When practical, manual removal of identified individuals from the mitigation wetland should continue. Additional application of herbicide (backpack sprayer or wipes) to emerging common reed when it is found should be implemented at the appropriate time.

**PHOTOGRAPH 4-12. Bagworm Observed on Trees along Southern Perimeter of Marsh Run Pond**

## Legal Mandates and Directives for Management of Invasive Species

***Federal Noxious Weed Act of 1974.*** The Federal Noxious Weed Act of 1974 as amended (7 U.S.C. §§ 2801-2814) provides for the control and management of non-indigenous weeds that injure, or have the potential to injure, the interests of agriculture and commerce, wildlife resources, or the public health. Some of the provisions of this act were repealed by the Plant Protection Act of 2000 (PPA), including U.S.C. 2802 through 2813. However, Section 1 (findings and policy) and Section 15 (requirements of Federal land management agencies to develop management plans) were not repealed (7 U.S.C. 2801 note; 7 U.S.C. 2814).

***Plant Protection Act of 2000.*** The Plant Protection Act of 2000, as amended (7 U.S.C. 7701–7786) states that the detection, control, eradication, suppression, prevention, or retardation of the spread of plant pests or noxious weeds is necessary for the protection of the agriculture, environment, and economy of the United States. This act defines the term ‘‘noxious weed’’ (7 U.S.C. 7702 § 403) to mean any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health, or the environment. Subsequent regulations implemented by the Noxious Weed Control and Eradication Act of 2004 amended the PPA.

***Noxious Weed Control and Eradication Act of 2004.*** The Noxious Weed Control and Eradication Act of 2004 (Public Law 108-412) amended the PPA by adding a new subtitle, “Subtitle E--Noxious Weed Control and Eradication'' (7 U.S.C. 7781–7786), which authorizes the Secretary of Agriculture to establish a program to provide financial and technical assistance to public and private landowners for the control or eradication of noxious weeds. This act defines noxious weeds and removes references to statutes that were repealed upon enactment of the PPA. This act prohibits the movement of a federally designated noxious weed into or through the

United States unless a permit is obtained for such movement and the movement is consistent with the specific conditions contained in the permit.

***Executive Order 13112.*** On February 3, 1999, EO 13112 was signed establishing the National Invasive Species Council. The purpose of EO 13112 was 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." ~~Details of EO 13112 can be viewed at:~~

~~*www.invasivespecies.gov/laws/execorder.shtml#sec2.*~~

### Department of Defense

DOD Directive 4715.1E, *Environment, Safety, and Occupational Health*, 19 March 2005; DODI 4715.03, *Environmental Conservation Program*, March 2011; and DODI 4150.07, DOD *Pest Management Program*, May 29, 2008 collectively establish the need and process by which each DOD installation is to develop a pest management plan and incorporate that plan into natural resources planning and other installation activities. The DOD Pest Management Program is overseen by the Armed Forces Pest Management Board. Details of the DOD Pest Management Program can be accessed at: *http://www.afpmb.org/*

### Commonwealth of Pennsylvania

The Pennsylvania Noxious Weed Control Law makes it illegal to propagate, sell, or transport weeds on the Noxious Weed Control List in the commonwealth. The invasive and nonnative plant species on this list are annotated in **Table 4-4**. The Noxious Weed Control List is maintained by the Noxious Weed Control Committee. The committee is composed of the Secretary of Agriculture, the Secretary of Environmental Resources, the Executive Director of the PAGC, and the chairmen of the Agriculture and Rural Affairs Committees of the Senate and House of Representatives.

### Pennsylvania Department of Conservation and Natural Resources

The PADCNR has created a list of invasive and nonnative plant species posing a threat to the natural resources of Pennsylvania. It is a reference list and not used for regulatory purposes (PADCNR undated).

**TABLE 4-4. Invasive and Nonnative Plants Observed on Defense Distribution Center, Susquehanna**

| Common Name | Scientific Name | Degree of Infestation | Federal Noxious Weed | PADCNR Invasive Plants | PA Noxious Weed Control List |
|---|---|---|---|---|---|
| Autumn olive | *Elaeagnus umbelata* | Moderate | | Rank 2 | |
| Barnyard grass | *Echinochloa crus-gallii* | Moderate | | | |
| Black locust | *Robinia pseudoacacia* | Minor | | | |
| Bull thistle | *Cirsium vulgare* | Moderate | | Rank 2 | Class B |
| Canada thistle | *Cirsium arvense* | Moderate | | Rank 2 | Class B |
| Catalpa | *Catalpa speciosa* | Moderate | | | |
| Common reed | *Phragmites australis* | Severe | | Rank 1 | |
| Common teasel | *Dipsacus fullonum* | Minor | | | |
| Crown vetch | *Coronilla varia* | Severe | | | |
| Duckweed | *Lemna minor* | Minor | | | |
| English ivy | *Hedera helix* | Minor | | Rank 3 | |
| Field bindweed | *Convolvulus arvensis* | Moderate | | | |
| Flat pea | *Lathyrus sylvestris* | Minor | | | |
| Fox grape | *Vitus labrusca* | Severe | | | |
| Garlic mustard | *Alliaria petiolata* | Minor | | Rank 1 | |
| Japanese honeysuckle | *Lonicera japonica* | Severe | | Rank 1 | |
| Japanese knotweed | *Polygonum cuspidatum* | Minor | | Rank 1 | |
| Japanese stilt grass | *Microstegium vimineum* | Moderate | | Rank 1 | |
| Jimsonweed* | *Datura stramonium* | Minor | | Rank 3 | |
| Mile-a-minute weed | *Polygonum perfoliatum* | Severe | X | Rank 1 | Class B |
| Mimosa | *Albizia julibrissin* | Minor | | Rank 2 | |
| Morrow's honeysuckle | *Lonicera morrowii* | Severe | | Rank 1 | |
| Mullein | *Verbascum thapsus* | Moderate | | | |
| Multiflora rose | *Rosa multiflora* | Moderate | | Rank 1 | Class B |
| Musk thistle* | *Carduus nutans* | Minor | | Rank 1 | Class B |
| Narrow-leaved cattail | *Typha angustifolia* | Moderate | | | |
| Oriental bittersweet | *Celastrus orbiculatus* | Severe | | Rank 1 | |
| Poison hemlock | *Conium maculatum* | Moderate | | Rank 1 | |
| Purple loosestrife | *Lythrum salicaria* | Moderate | | Rank 1 | Class B |
| Queen Anne's lace | *Daucus carota* | Moderate | | | |
| Russian olive | *Elaeagnus angustifolia* | Moderate | | Rank 2 | |
| Shattercane* | *Sorghum bicolor* | Minor | | Rank 3 | Class B |
| Spotted knapweed | *Centaurea stoebe* | Minor | | Rank 3 | |
| Tartarian honeysuckle | *Lonicera tatarica* | Severe | | Rank 1 | |
| Tree-of-heaven | *Ailanthus altissima* | Severe | | Rank 1 | |
| Water pepper | *Polygonum hydropiper* | Minor | | | |
| Wild pea | *Lathyrus latifolius* | Moderate | | | |

*Note: * No longer known to be present but previously observed on Defense Distribution Center, Susquehanna*
*PADCNR Rank Definitions: Severe Threat = 1; Significant Threat = 2; Lesser Threat = 3*
*PADCNR Class Definitions: A = High Priority; B = Moderate Priority; C = Highest Priority*
*Source: DLA 2006; PADCNR 2018; NRCS 2020*

### 4.7.5 Nuisance or Pest Species

Integrated pest management (IPM) is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks. Federal agencies are mandated to use IPM by Public Law (Section 136r-l of title 7, U.S.C.). The IPMP is a guide to reduce reliance on pesticides and to enhance environmental protection; it reflects current DOD and Army policies, procedures, and standards and incorporates the requirements of the USEPA and the Commonwealth of Pennsylvania. The IPMP for Defense Distribution Center, Susquehanna (DLA 2020) describes program elements, including health and environmental safety; pest identification; pest management; and pesticide storage, transportation, use, and disposal.

This IPMP is written under the authority of the following:

- Section 136 et seq. of title 7 U.S.C., Federal Insecticide, Fungicide and Rodenticide Act as amended
- DODI 4150.07, DOD Pest Management Program, May 29, 2008
- AR 200-1, Environmental Protection and Enhancement, December 13, 2007.

The Defense Distribution Center, Susquehanna IPM Coordinator maintains this IPMP. This plan is reviewed and updated annually to reflect all changes made in the pest management program during each fiscal year. Annual updates of this plan are sent to the DLA Pest Management Consultant not later than 30 October of each year. Annual updates to the plan should be submitted using the Plan Update Form located in the Army Knowledge Online pest management folder in the Office of the Director Environmental Programs (ODEP) Training Knowledge Center. (Instructions for navigating to this form can be found in the Army Pest Management Timely Topics Volume 2, Number 17, August 25, 2004.)

Chemical pest control activities on Defense Distribution Center, Susquehanna are performed by state-certified Pesticide Applicators, and contractors or local city or county personnel, as necessary, to control pests. Pests included in the plan are weeds and other unwanted vegetation; and vertebrate pests such as mice, flying insects, crawling insects, and spiders. These pests can interfere with the military mission, damage real property and the environment, increase maintenance costs, and expose personnel to diseases unless properly controlled.

Non-chemical control methods such as the following are used to manage wildlife pests:

- Swallow nest removal
- Trapping and shooting of pigeons, starlings, and house sparrows (these species are not protected under the MBTA)
- Biological control of tree pests, such as Japanese beetles, tent caterpillars, and bagworms, using *Bacillus thuringiensis*
- Live trap and release of vertebrate pests (raccoons, chipmunks, foxes, skunks, squirrels, beavers, opossums, dogs, cats, deer, and rabbits) at wooded margins
- Snake capture and removal.

A pest-control facility with stored pesticides is located on Defense Distribution Center Susquehanna. The pest control program is managed by the IPM Coordinator and the Quality Assurance Evaluator(s).

## 4.8 Federal Threatened and Endangered Species and Habitats

An installation's overall ecosystem management strategy must provide for protection and recovery of threatened and endangered species. Under the ESA, an "endangered species" is defined as any species that is in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The USFWS has also presented an updated list of species that are regarded as candidates for possible listing under the ESA. Although candidate species receive no statutory protection under the ESA, the USFWS believes it is important to advise government agencies, industry, and the public that these species are at risk and could warrant protection under the act.

The Pennsylvania Statutes (Pa. Stat. Ann. Tit. 32 §§ 5302–11 [1997]) set out the legislative policy that it is in the interest of the commonwealth to protect those species "including those rare or endangered, which are not commonly pursued, killed or consumed either for sport or profit, that are in need of more active management, that it is in the public interest to preserve and enhance such species for the benefit of all." A fund, entitled the "Wild Resource Conservation Fund," was established to serve as the funding base for protecting defined vulnerable species (as defined by statute). Violation of the act results in a fine.

The USFWS was contacted regarding the presence of threatened and endangered species in the geographic area of Defense Distribution Center, Susquehanna pursuant to the requirements of Section 7(c) of the ESA (16 U.S.C. 1536); the PADCNR pursuant to the requirements of the Native Plant Species Legislative Authority (Title 17 Chapter 45, Conservation of Native Wild Plants, January 1, 1988); the PAGC pursuant to the requirements of the Wild Birds and Mammals Legislative Authority (Title 34 Chapter 133, Game and Wildlife Code, revised Dec. 1, 1990); and the PAFBC pursuant to the requirements of the Fish, Amphibians, Reptiles, and Aquatic Organisms Legislative Authority (Title 30, Chapter 75, Fish and Boat Code, revised February 9, 1991). No state agency has been assigned to develop regulations to protect terrestrial invertebrates although a Federal status could exist for some species.

Prior to the 2015 field surveys, desktop analyses were conducted to identify potential threatened and endangered and/or special concern ('sensitive') species and natural areas within or near the Defense Distribution Center, Susquehanna. PNDI tool, USFWS' Information for Planning and Conservation (IPaC) system, and the Pennsylvania Natural Heritage Program (PNHP) were consulted.

The PNDI records indicated there may be potential impacts to sensitive species within or near the Defense Distribution Center, Susquehanna (PNHP 2015). The Pennsylvania PADCNR identified ellisia (*Ellisia nyctelea*) in the vicinity of Defense Distribution Center, Susquehanna. The PAGC, PAFBC, and U.S. Fish and Wildlife Service indicated that there were no known impacts to species under their purview and that no further review with these agencies is required. Although outside the boundary of the Defense Distribution Center, Susquehanna, the areas identified by PNHP as

having populations of ellisia were surveyed according to the PADCNR Botanical Survey Protocols (PADCNR 2011). No populations of ellisia were found during the 2015 surveys.

In a letter dated December 18, 2015, the USFWS recommended a Phase II Bog Turtle Survey be performed. Additionally, The USFWS recommended that the INRMP incorporate management actions and protection measures specific to the northern long-eared bat (see consultation correspondence in **Appendix D**). These comments were incorporated into the Threatened, Endangered, and Species of Concern section of this INRMP (see **Section 5.2**). On February 16, 2016, the USFWS-PAFO provided their signature for the INRMP update.

In a letter dated December 15, 2015, the PADCNR indicated that no impact is likely to occur on species of special concern under their jurisdiction as a result of the implementation of the 2016 INRMP. PNDI records indicate species or resources under PADCNR's jurisdiction are in the vicinity of the project. However, based on the information concerning the nature of the project, the immediate location, and their detailed resource information, PADCNR determined that no impact is likely. No further coordination with the agency is needed for this project (see consultation correspondence in **Appendix D**).

On December 16, 2015, the PAGC provided their signature for the INRMP update (see consultation correspondence in **Appendix D**). In a letter dated December 21, 2015, the PFBC indicated that, except for occasional transient species, rare, candidate, threatened or endangered species under their jurisdiction are not known to exist in the vicinity of the project area. Therefore, no biological assessment or further consultation regarding rare species is needed with the PFBC for the implementation of the INRMP (see consultation correspondence in **Appendix D**).

Project-specific coordination regarding the bog turtle related to the MS4 Project is described in **Section 4.8.1** and is reflected in **Appendix G.3**.

### ~~4.8.1 Federally-listed Species~~

During the development of the 2016 INRMP, it was determined that there are three threatened or endangered species with the potential to occur on or near the installation, including the Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*), and bog turtle (USFWS 2015). A Phase I Habitat Assessment for bog turtles was conducted at the installation in 2012 and a site review to determine whether a Phase II survey should be conducted took place in 2019. However, no Phase I Habitat Assessment for Indiana or northern long-eared bats has been conducted. The 2016 INRMP update included discussion of the Indiana bat (*Myotis sodalis*) as well as the bog turtle (*Clemmys muhlenbergii*) as species with the potential to occur. The bog turtle and northern long-eared bat are discussed in detail below. Management actions and protection measures for these species are proposed in **Section 5.2** in accordance with consultation correspondence received from USFWS on 18 December 2015 during the development of this INRMP (USFWS Project #2012-0123; **Appendix D**) as well as on September 30, 2019 (**Appendix G.3**).

~~**Species Descriptions**~~

### 4.8.2 Northern Long-eared Bat (*Myotis septentrionalis*)

Based on consultation with USFWS, the installation is located within an area occupied by a maternity colony (i.e., summer habitat) and within the swarming radius of a hibernaculum (see consultation correspondence in **Appendix D**).

*Status.* The northern long-eared bat is federally listed as a threatened species with the 4(d) rule under the ESA. The 4(d) rule was published in the Federal Register on 14 January 2016. The following species information is adapted from a USFWS Fact Sheet (USFWS 2015).

*Identifying Characteristics.* The northern long-eared bat is a medium-sized bat with a body length of 3 to 3.7 inches but a wingspan of 9 to 10 inches. Their fur color can be medium to dark brown on the back and tawny to pale brown on the underside. As its name suggests, this bat is distinguished by its long ears, particularly as compared to other bats in its genus, Myotis.

*Biology-Natural History.* Breeding begins in late summer or early fall when males begin swarming near hibernacula. After copulation, females store sperm during hibernation until spring, when they emerge from their hibernacula, ovulate, and the stored sperm fertilizes an egg. This strategy is called delayed fertilization. After fertilization, pregnant females migrate to summer areas where they roost in small colonies and give birth to a single pup. Maternity colonies, with young, generally have 30 to 60 bats, although larger maternity colonies have been observed. Most females within a maternity colony give birth around the same time, which may occur from late May or early June to late July, depending where the colony is located within the species' range. Young bats start flying by 18 to 21 days after birth. Adult northern long- eared bats can live up to 19 years.

Northern long-eared bats emerge at dusk to fly through the understory of forested hillsides and ridges feeding on moths, flies, leafhoppers, caddisflies, and beetles, which they catch while in flight using echolocation. This bat also feeds by gleaning motionless insects from vegetation and water surfaces.

*Preferred Habitat.* During summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. Males and non- reproductive females may also roost in cooler places, like caves and mines. This bat seems opportunistic in selecting roosts, using tree species based on suitability to retain bark or provide cavities or crevices. It has also been found, rarely, roosting in structures like barns and sheds. Northern long-eared bats spend winter hibernating in caves and mines, called hibernacula. They typically use large caves or mines with large passages and entrances; constant temperatures; and high humidity with no air currents. Specific areas where they hibernate have very high humidity, so much so that droplets of water are often seen on their fur. Within hibernacula, surveyors find them in small crevices or cracks, often with only the nose and ears visible.

Due to the potential occurrence of the northern long-eared bat within the vicinity of the installation, tree cutting, removal, and clearing should be conducted between the dates of October 15 and March 31 when feasible and when directed by Project-specific consultation findings.

*Threats.* White-nose syndrome, a fungal disease known to affect bats, is currently the predominant threat to this bat, especially throughout the Northeast where the species has

declined by up to 99 percent from pre-white-nose syndrome levels at many hibernation sites. Although the disease has not yet spread throughout the northern long-eared bat's entire range, it continues to spread.

*Habitat Assessments*. No Phase I Habitat Assessments for Indiana or northern long-eared bats have been conducted on the installation.

### 4.8.3 Bog Turtle (Clemmys muhlenbergii)

The installation is within the known range of the bog turtle. Potentially suitable habitat for bog turtles has also been identified at the installation (see consultation correspondence in **Appendix D**).

*Status.* The bog turtle, a federally listed threatened and state-listed endangered species in York County, Pennsylvania (**Photograph 4-13)**. York County is located within the extant range of the northern population of the species.

*Photo Courtesy of Washington DC Library*

**PHOTOGRAPH 4-13. Bog Turtle**

*Identifying Characteristics.* The shell of the bog turtle varies from light brown to black with sunburst-like patterns. Their limbs are typically brown, but might be flecked with orange. A key identifying mark is a large orange or yellow patch on each side of the head.

*Biology-Natural History.* Mating occurs from late April to early June. Clutch size consists of between one and six eggs in May, June, or July (occasionally August). Eggs hatch approximately 6 to 9 weeks in late July to early September. In the north, hatchlings might not emerge from the nest until October or they might overwinter in the nest. Bog turtles become sexually mature in five to eight years; however not all adult females produce clutches annually. Bog turtles feed opportunistically on insects, worms, slugs, crayfish, snails, other small invertebrates, amphibian larvae, and fruits. Insects generally dominate their diet and bog turtles apparently forage on land and under water (NatureServe 2006).

*Preferred Habitat.* Bog turtles typically inhabit emergent wetland in meadows and pastures with a persistent source of groundwater springs and seeps which induce the development of thick, organic, mucky soil conditions. Potential habitat for the species is typically recognized by the presence of three criteria: suitable hydrology, suitable soil conditions, and suitable vegetative characteristics. Suitable hydrology, soils, and vegetation are necessary to provide critical thermoregulation and wintering sites for hibernation (soft muck, peat, burrows, root systems of woody vegetation), escape cover from predators, and nesting habitats (open areas with tussock-forming vegetation) for this species. It is important to note that one or more of these criteria may be absent from portions of a wetland supporting bog turtles. The species has also been documented in some locations to become acclimated to disturbed wetland complexes with semi-closed forest canopies. Bog turtles have been observed to be transients in forested habitat

associated with springs and small streams leading to more open marshes. These forested habitat areas may be utilized as dispersal corridors to other wetlands.

*Threats.* The bog turtle is very difficult to find because of its decline in the state due to loss of habitat. Threats to bog turtles include habitat loss from wetland alteration, development, natural vegetation succession, and illegal collection for the commercial pet trade (Bourg 1992).

*Phase I Habitat Assessment.* In 2012, A Phase I species habitat assessment to determine the presence of conditions suitable for species support at Defense Distribution Center, Susquehanna was conducted by a recognized-qualified bog turtle surveyor on November 6, 2012. This assessment was conducted in order to assess potential impacts to bog turtle habitat related to the ACP-4 Project described in **Section 4.7.3**. The following information was adapted from the report of findings submitted to USFWS for concurrence on January 7, 2013 (see Appendix F).

The habitat assessment was conducted using the *USFWS Guidelines for Bog Turtle Surveys, Bog Turtle Northern Population Recovery Plan, April 2006*. Three criteria were assessed within the project area for the potential occurrence of the species.

1. Suitable Hydrology - typically spring-fed with shallow surface water or saturated soils present year-round, although in summer the wet area(s) may be restricted to near spring head(s)
2. Suitable Soils - a bottom substrate of at least three inches of soft muck, although in summers of dry years mucky soils may be limited to near spring head(s)
3. Suitable Vegetation - dominant vegetation of low grasses, sedges, and forbs (emergent wetland), often with a scrub-shrub component, or possibly adjacent forested groundwater seeps

Additional information evaluated relevant to species habitat included the physical condition and disturbance of the existing wetland habitats, and metapopulation concepts. Metapopulations are defined as collections of populations that exist within a landscape matrix and are separated by areas of different or unsuitable habitat. For these populations to persist, an exchange of individuals must occur within the metapopulation. This exchange occurs by using travel corridors as links between the discrete populations. Knowledge of bog turtle movement patterns and utilization of diverse habitat types is still limited within the scientific community. However, wetland habitats dispersed throughout riparian stream corridors may provide travel corridors that facilitate movement within metapopulations between patches of unfavorable habitat. The Standardized Bog Turtle Site-Quality Analysis (Klemens 1993) defines metapopulation concepts for the species by the following factors:

- no major impediments to turtle movements between populations (impediments are defined as conditions which significantly reduce the chance of successful movement between wetland sites, such as steeply graded streams, roads with inadequate crossing design, dams, and large watercourses over third order);
- continuous corridor of stream/wetland habitat connecting populations; and
- individual populations that are separated by no more than one mile of unfragmented stream habitat.

- In recognition of this concept, an evaluation of watercourses and riparian corridors associated with any identified wetland area was completed. Additionally, a limited cursory overview was undertaken for potential adjacent wetlands and watercourses within 300 feet of the installation.

Description. Marsh Run originates from a large palustrine forest/emergent headwaters wetland area immediately west of State Route 1003 (Old York Road) and the installation property. The large headwaters wetland area appears to be supported by numerous hydrologic sources including persistent groundwater discharge, stormwater surface runoff from the Pennsylvania Turnpike corridor, and upslope headwater tributary streams. This large headwater wetland complex supports areas of organic mucky soils ranging from 3 – 24 inches in depth and additional characteristics of potentially supporting habitat conditions for the species. Hydrology from this complex is conveyed onto the installation property via multiple culvert structures under State Route 1003. The primary culvert connection being located at the western property limits near Normandy Drive / H Avenue.

The Marsh Run corridor can be primarily characterized as impounded open water habitat throughout southwestern corner of the installation property. This impounded section of the corridor consists of deep open-water areas with limited emergent/scrub-shrub fringes. Additional stormwater surface runoff and overland flow from the Pennsylvania Turnpike corridor is conveyed into the impoundment area via roadway culvert structures. Deeper, open water impounded microhabitats are not typical of supporting characteristics for the species.

Immediately downslope of the impounding earthen berm, the Marsh Run corridor transitions to a large emergent marsh complex with a centralized headwater watercourse channel. Additional hydrology sources including persistent groundwater discharges zones and surface runoff from the surrounding uplands are captured in a topographically depressed valley landscape position. The large emergent marsh corridor continues throughout the remainder of the installation property prior to its exit near the southeast property corner. Additional sections of forested and scrub-shrub wetland vegetative components are associated with the corridor in the southeastern section. Characteristic vegetative species throughout the marsh complex and adjoining forested/scrub-shrub sections include the following: cattails *(Typha latifolia),* sedge species *(Carex sp)*, sensitive fern *(Onoclea sensibilis)*, tearthumb *(Polygonum sagittatum)*, willow-herb *(Epilobium coloratum)*, silky dogwood *(Cornus amomum)*, alder *(Alnus sp.)*, pin oak *(Quercus palustris)*, and red maple *(Acer rubrum)*. A diverse vegetative structure of hummocky and pedestal emergent characteristics, as well as, bordering scrub-shrub/forested components are present within this complex. Soil conditions throughout the marsh complex and adjoining forested/scrub-shrub sections are comprised of a mosaic of firm mineral soils, and organic mucky soils ranging from 3 – 24 inches in depth. The organic mucky soil characteristics are typically associated with zones of persistent groundwater discharge flowing into the corridor. It is estimated that suitable mucky soil conditions for species support extend throughout 33 to 50 percent of this section of the Marsh Run complex.

Phase I Survey Findings (2013). In summary, components of persistent groundwater discharge and suitable mucky soil conditions are present throughout the Marsh Run drainage basin in the headwaters region located immediately west of the Defense Distribution Center, Susquehanna property, as well as, marsh complex extending through the property downslope of the open water

impoundment section. These characteristics are indicative of potentially suitable habitat for the species. Additional wetland components associated with stormwater management collection and treatment areas throughout the installation property and not associated with the Marsh Run corridor were not regarded as potentially suitable habitat for the species.

The determination of aquatic resource conditions which could potentially support the species in any specific location is subject to the review and concurrence of the USFWS.

*Habitat Review* (2019). A field assessment and habitat review at the installation with the USFWS and a recognized-qualified bog turtle surveyor was conducted on June 28, 2019.

Habitat Review Findings (2019). An evaluation of anticipated direct, indirect, interrelated, and interdependent effects on the bog turtle was conducted via an analysis of Project factors such as timing of the action, magnitude of the action, proximity of the action, nature of the action, and duration of the action on the bog turtle at all phases of biological development. The evaluation concluded that while potential habitat for the species is located within and adjacent to the MS4 Project Sites 2 and 3 described above, potential hibernaculum microhabitat is not present in the proximity of any of the Project areas.

Based on the evaluation of anticipated effects resulting from the proposed action and consideration of proposed avoidance, minimization, and construction management measures, USFWS concluded in a letter dated September 30, 2019, that the actions may affect but are not likely to adversely affect the bog turtle. BMPs and measures described in the consultation package would be implemented during the MS4 Project to avoid and minimize any effects on the bog turtle (see **Appendix G.3**, letter dated September 30, 2019). The measures generally addressed approved timing of the work, construction monitoring by a recognized-qualified bog turtle surveyor, construction personnel environmental training, compliance with the Project Erosion and Sediment Pollution Control Plan and the installation Spill Prevention Control and Countermeasure Plan (Integrated Contingency Plan, DLA 2018b). The measures also address in-stream structures directives, material staging areas, exclusion practices, and the requirement to develop a comprehensive Project summary report for Marsh Run Sites 2 and 3 within 60 days of completion of the Project by a recognized-qualified bog turtle surveyor.

## 4.9 State-listed Species and Habitats

State-listed species that are not federally listed under the ESA ~~will be~~ are ~~considered~~ taken into consideration when planning and implementing natural resources in management on the installation. Species protected under the ESA are discussed in **Section 4.8**. There are state-listed species, migratory birds, and plant species of concern at Defense Distribution Center, Susquehanna that are not provided species-specific management but are taken into consideration in developing land management actions and priorities.

In the state of Pennsylvania, plants and terrestrial invertebrate animals are under the jurisdiction of the PADCNR. Mammals and birds are under the jurisdiction of the PAGC. Aquatic animals are under the jurisdiction of the PAFBC and are subject to unauthorized collection.

### 4.9.1 Migratory Birds

Migratory birds are a diverse group, relying on a wide range of habitats during their breeding and non-breeding seasons and during migration. Effective bird conservation necessitates coordinated efforts that improve habitats and contribute to the overall health of ecosystems. Given the vast geographic ranges of migratory birds, the variety of species, and the incomplete knowledge of their life cycle requirements, conservation partnerships spanning geopolitical and taxonomic boundaries are critical to the success of migratory bird conservation efforts (DOD PIF 2009). EO 13186, *Conservation of Migratory Birds* (January 10, 2001), creates a more comprehensive strategy for the conservation of migratory birds by the Federal government. The EO provides a specific framework for the Federal government's compliance with its treaty obligations to Canada, Mexico, Russia, and Japan. The EO provides broad guidelines on conservation responsibilities and requires the development of more detailed guidance in an MOU. The EO is coordinated and implemented by the USFWS. The MOU outlines how Federal agencies would promote conservation of migratory birds. The EO requires the support of various conservation planning efforts already in progress; incorporation of bird conservation considerations into agency planning, including NEPA analyses; and reporting annually on the level of take of migratory birds.

### 4.9.2 Birds of Conservation Concern

The 1988 amendment to the Fish and Wildlife Conservation Act mandates the U.S. Fish and Wildlife Service to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973." The Birds of Conservation Concern (BCC) list is the most recent effort to carry out this mandate. Bird species considered for the BCC include:

1. Nongame birds
2. Gamebirds without hunting seasons
3. Subsistence-hunted nongame birds in Alaska
4. ESA candidate, proposed, and recently delisted species.

### 4.9.3 State-listed and Birds of Conservation Concern Descriptions

Of the wildlife species observed on the installation during the 2015 surveys, two species, including the black-billed cuckoo and wood thrush, are BCC and one, the great egret, is state endangered (USFWS 2015; PNHP 2015). One sensitive plant, ellisia, also has the potential to occur, at Defense Distribution Center, Susquehanna.

***Great Egret (Ardea alba).*** A great egret was observed in Marsh Run Pond during the May 2015 surveys (see **Photograph 4-14**). The following information is adapted from Pennsylvania Game Commission (PAGC) and Pennsylvania Fish & Boat Commission (2005).

*Status.* The great egret is federally protected under the MBTA and in Pennsylvania as a state endangered species. Nesting colonies are protected through the PNHP and the Environmental Review process. Colonies are monitored through the PAGC colonial waterbird program. The PAGC counts active great egret nests in every known colony in the state every year to track changes in population size. Since 2009, two nesting locations have been active in Pennsylvania: Kiwanis Lake, York County (fewer than 10 pairs) and the Susquehanna River's Wade Island,

Dauphin County (fewer than 200 pairs). Defense Distribution Center, Susquehanna is approximately 7.5 miles from Wade Island and 18 miles from Kiwanis Lake.

*Identifying Characteristics.* Great egrets are almost the size of a great blue heron (*Ardea herodias*), but white rather than gray blue. The plumage is white, bill yellowish, and legs and feet black. Commonly confused species include cattle egret (*Bubulus ibis*), snowy egret (*Egretta thula*), and juvenile little blue herons (*Egretta caerulea*); however, these species are smaller and do not nest regularly in the state.

*Biology-Natural History.* The Mid-Atlantic coastal population extends up the streams of the Delaware and Susquehanna drainages. During spring migration, this species travels northward from the wintering areas in southern U.S and Central America. By mid-spring, nesting has started. After a 24-day incubation period and six weeks as nestlings, young are ready to fly by mid-June to July. Maturity may not be reached until the third year.

**PHOTOGRAPH 4-14. Great Egret (center of photo) at Marsh Run Pond**

Diet consists of frogs, small fish, and other small aquatic animals. Great egrets forage at varying distances from the nest depending on food availability, but typically within six miles (10 kilometers). Water willow (*Decodon verticillatus*) shallows near islands are important hunting grounds for these birds. Rusty crayfish (*Cercopagis pengoi)*, a species not native to Pennsylvania, is often eaten by great egrets in deeper water.

*Preferred Habitat.* This great egret is typically found feeding in shallow rivers, streams, ponds, lakes and marshes. Nests are found in adjacent trees or shrubby growth, preferably on islands. The birds usually nest in colonies that may include other colonial nesting species.

*Threats.* The main threats faced by the great egret are habitat loss (flooding of shallow feeding areas as a result of dams, for example), water pollution and disturbance of nesting colonies. Boat traffic also can disturb egrets and boat wakes can wash out the shallow foraging areas.

***Black-billed Cuckoo (Coccyzus erythropthalmus).*** Although no black-billed cuckoos were observed during the May 2015 surveys, this species was observed in 2008 and has the potential to occur on the installation. The following information is adapted from USFWS (2015).

*Status:* The black-billed cuckoo is a Bird of Conservation Concern.

*Identifying Characteristics.* The black-billed cuckoo is a slender, long-tailed bird colored in soft browns and grays with an all-black bill. The immature birds resemble adults but are more brownish with a less distinct tail pattern. The similar yellow-billed cuckoo has a yellow lower mandible, a prominent rufous patch in the wings, a yellow eye ring, and much larger white spots under the darker tail feathers.

*Biology-Natural History.* The black-billed cuckoo is a migratory bird with a large geographical range that spans the northern central and eastern regions of the United States, and the southern central provinces of Canada. The black-billed cuckoo is thought to have a monogamous mating system and has been reported to have both solitary and social breeding behaviors. The peak of the breeding season often shows strong correlations with the timing of the peak in eastern deciduous foliage, and with outbreaks in insect populations. This species is thought to be single-brooded; with an average size of 2-3 eggs. The eggs of the clutch will be laid in the nest and incubated by both sexes for 10-11 days.

Black-billed cuckoos eat large insects such as caterpillars, katydids, cicadas, and grasshoppers. Along with yellow-billed cuckoo, this is one of only two species found to be more numerous during periodic cicada emergences in a recent analysis. Black-billed cuckoos occasionally eat eggs of other birds. On their wintering grounds they also eat fruit and seeds.

*Preferred Habitat.* Black-billed cuckoos are birds of woodlands and thickets, including aspen, poplar, birch, sugar maple, hickory, hawthorn, and willow. This species is often found in mesic environments that have strong associations with water, such as young deciduous and mixed deciduous-coniferous woods, the edges of bogs and marshes, rivers and lakeshores, or abandoned farmlands or brushy hillsides and pastures. They tend to occur in more extensive tracts of woods than the yellow-billed cuckoo and are more likely to be found in deciduous than coniferous woods.

*Threats.* This species of bird was historically much more common within North America. Significant declines in population density occurred in the 1980s and 1990s. There is thought to be a connection between the use of pesticides to control caterpillar populations and the declines in the black-billed cuckoo population counts. Black-billed cuckoos are also frequently felled by collisions with TV towers, tall buildings, and other structures during migration.

***Wood Thrush (Hylocichla mustelina).*** Although no wood thrushes were observed during the May 2015 surveys, this species was observed in 2008 and 2012, and has the potential to occur on the installation.

*Status:* The wood thrush is a Bird of Conservation Concern.

*Identifying Characteristics.* Wood thrushes are warm reddish-brown above and white with bold black spots on their underparts. Juveniles show a somewhat muted version of the same pattern. The Wood Thrush has a pot-bellied body, short tail, straight bill, big head, and upright posture.

*Biology-Natural History.* The wood thrush breeds in deciduous and mixed forests in the eastern U.S. where there are large trees, moderate understory, shade, and abundant leaf litter for foraging. The nest building process takes 3–6 days. A pair often raises two broods of youngsters per season but may need three or four attempts to do so.

wood thrushes feed mostly on leaf-litter invertebrates and fruits from shrubs. Their summer diet is predominantly invertebrates, including adult beetles and flies, caterpillars, spiders, millipedes, woodlice, and ants. Insects, snails, and salamanders found in trees are occasional prey. Fruits like spicebush, fox grape, blueberry, holly, elderberry, jack-in-the-pulpit, Virginia creeper, pokeweed, dogwood, black cherry, and black gum make up most of the rest of their diet.

*Preferred Habitat.* This species prefers moist closed canopied deciduous forests with a well-developed understory. Bottomlands and rich hardwoods forests are favored habitats. In general, forests larger than 250 acres are best suited for nesting success.

*Threats.* One partial reason for declines is thought to be habitat fragmentation in both breeding and wintering grounds. Fragmented habitats may offer poorer food or expose nests to predators such as raccoons, jays, crows, and domestic or feral cats, and to the brown-headed cowbird, which is a nest parasite. However, in some studies habitat fragmentation has not hampered nest success.

***Ellisia (Ellisia nyctelea).*** Although PADCNR identified ellisia in the vicinity of Defense Distribution Center, Susquehanna, no populations of ellisia were found during the 2015 surveys at the installation. The following information was adapted from PNHP (2014).

*Status.* The Pennsylvania Biological Survey considers ellisia to be a species of special concern, based on the relatively few occurrences that have been recently confirmed. It has a PA legal rarity status and a suggested rarity status of Threatened.

*Identifying Characteristics.* Ellisia is a spring annual herb that grows 4 to 16 inches tall. Its stems are light green or light purple and usually hairy along their length. The leaves tend to be oppositely arranged on the lower stem and alternately arranged on the upper stem. The hairy leaves are up to 4 inches long and deeply dissected into toothed lobes. The flowers appear in April and May and grow individually from the upper leaf axils. The ¼ inch flowers are whitish-blue and have five petal-like lobes that are fused near the base to form a bell-shaped flower. The sepals are united near the base and persist on the usually 4-seeded, capsule-like fruit.

*Biology-Natural History.* Ellisia occurs throughout much of the U.S., but is absent from northern New England, the southeast, and the West Coast.

*Preferred Habitat.* In Pennsylvania, ellisia grows on damp, shady stream banks with rich alluvial soils and sometimes in disturbed ground.

*Threats.* The rich shady stream banks that ellisia depends upon are highly influenced by flooding events. Alteration of the natural flood cycle, dam building, increased erosion, and clearing of floodplain forests all affect the quality of suitable habitat. Populations are also threatened by loss of habitat from development and displacement by invasive plants.

## 4.10 Natural Areas and Sensitive Species

The York County Natural Areas Inventory information for rare, threatened, and endangered species and the highest quality natural areas in York County (YCPC 2004). In addition, the York County Natural Areas Inventory describes locations of areas that are significant on a county-wide scale but cannot be deemed exemplary natural communities because of past disturbance. These “locally significant" sites represent good examples of habitats that are relatively rare in the county, support an uncommon diversity of plant species and/or provide valuable wildlife habitat on a local level.

Natural Areas and Locally Significant Sites within, or adjacent to, the installation boundary include the following (YCPC 2004):

***Marsh Run*.** Marsh Run consists of a portion of floodplain and adjacent riverbank along the Susquehanna River. This area has been impacted by the construction of the rail line which runs along the riverbank. According to the York County Natural Areas Inventory, a low-quality population of ellisia, a PA-Threatened plant species, was documented in open areas on both the sloping riverbank and the adjoining flood plain of Marsh Run. Common associate species are herbs and grasses which can include Queen Anne's-lace, geranium (*Geranium* spp.), dogbane (*Apocynum* spp.), and knotweeds (*Polygonum* spp.).

***Mt. Olivet Marsh.*** The marsh wren, a species of special concern, was last observed at this site in 1985. It prefers marshes with deep water and dense vegetation, such as cattails, bulrushes, or reeds. Its primary food is insects. Habitat still exists for this species at this site. This site also provides habitat for a diversity of bird species as well as reptiles and amphibians.

***Susquehanna River***. The Susquehanna River a locally significant site and is considered an excellent recreational and scenic resource (YCPC 2004); it includes many current and historical records for species of special concern. The river and adjacent forested watersheds comprise one of the major corridors for the movement of biota in central Pennsylvania.

# 5 Management Concerns, Objectives, and Actions

Management objectives established in this INRMP were developed through a thorough evaluation of the natural resources present at Defense Distribution Center, Susquehanna. In accordance with the principles of adaptive ecosystem management, subject areas were identified, and management alternatives developed by an interdisciplinary team of ecologists, biologists, geologists, planners, and environmental scientists. This section presents the preferred management alternatives based on the professional opinions of Defense Distribution Center, Susquehanna, the USFWS, PAFBC, PAGC, and PADCNR. Through these evaluations, a set of natural resources planning, and management goals have been established that represent the most current theories on adaptive ecosystem-based planning (see **Table 5-1**). Selection of these management goals has been tempered with the fact that the operational mission at Defense Distribution Center, Susquehanna takes primacy over natural resources management. However, through the multiple-use adaptive paradigms used, sound ecological management should supplement the operational effectiveness and safety of the military missions. Ecosystem management provides a means for the installation to conserve biodiversity and to provide high-quality military readiness. The INRMP is a mechanism through which Defense Distribution Center, Susquehanna can maintain sustainable land use through ecosystem management.

Items have been identified in subject areas that affect the natural resources present on and immediately adjacent to Defense Distribution Center, Susquehanna. The purpose of this section is to identify actions and objectives for Defense Distribution Center, Susquehanna and to obtain workable and useful solutions for each item identified. Natural resources initiatives and subsequent actions often benefit and cut across multiple resources and program areas.

Specific concerns, objectives, and actions were developed to meet the overriding goals for natural resources managed on the Defense Distribution Center, Susquehanna (see **Table 5-1**). For simplicity and clarity within this INRMP, resources were categorized into a topic, and each natural resource topic is assigned an individual “issue number.” Each subject area has been abbreviated, as shown in **Table 5-2**. A summary of the management actions and the estimated timeframe for completion is presented in **Table C-1**, **Appendix C.**

**TABLE 5-1. Summary of INRMP Goals**

| Ecosystem Management Goals |
|---|
| ▪ Manage Defense Distribution Center, Susquehanna based on a regional ecosystem approach that conserves biodiversity. |
| ▪ Identify natural resources and operational actions that compromise the function and composition of ecosystems and develop remedies through adaptive management. |
| ▪ Implement management strategies with consideration of ecological units and timeframes. |
| ▪ Support sustainable, multiple-use human activities. |
| ▪ Apply ecosystem-based management through implementation of the INRMP and other installation plans and programs. |

| Threatened, Endangered, and Species of Concern Goals |
|---|
| ▪ Manage Defense Distribution Center, Susquehanna on a regional ecosystem-based approach that manages sensitive species and their associated ecosystems while protecting the operational functionality of Defense Distribution Center, Susquehanna's missions.<br>▪ Ensure that Defense Distribution Center, Susquehanna remains in compliance with the ESA and appropriate state regulations.<br>▪ Promote natural resources and ecosystem management in the local region that benefits the functionality of the ecosystems.<br>▪ Protect sensitive wildlife habitats on Defense Distribution Center, Susquehanna. |
| **Wetlands and Waters of the United States Goals** |
| ▪ Remain in compliance with USACE and Commonwealth of Pennsylvania wetlands regulations.<br>▪ Minimize the operational impact of Defense Distribution Center, Susquehanna missions on wetlands.<br>▪ Maintain healthy, functional wetlands that can sustain minor operational influences and minor, inadvertent encroachments.<br>▪ Enhance wetland functionality to maximize societal-based wetland values within local ecosystems.<br>▪ Maximize floral and faunal diversity of wetland communities in areas that will not affect the military mission.<br>▪ Manage for no net loss of wetland acreage, functions, and values.<br>▪ Implement the approved compensatory mitigation plan and manage the constructed wetlands as required under the BRAC GPW Project wetland permits.<br>▪ Implement the approved compensatory mitigation plan and manage the constructed wetlands and streams as required under the ACP-4 Project Federal and state authorizations, permits, plans, and regulatory guidance.<br>▪ Implement the approved compensatory mitigation plan and manage the constructed wetlands as required under the MS4 Project Federal and state authorizations permits, plans, and regulatory guidance. |
| **Watershed Management Goals** |
| ▪ Reduce/control nutrient and sediment inputs into the watershed that degrade water quality.<br>▪ Manage the repair and installation of roads in a manner that minimizes the potential for erosion and sedimentation.<br>▪ Minimize nonpoint source pollution of both surface and groundwater in the watershed through the implementation of BMPs.<br>▪ Continue surface water monitoring program under NPDES.<br>▪ Understand ecosystem dynamics within the watershed to prevent or respond to threats to its integrity.<br>▪ Maintain vegetation buffers on waterways/riparian corridors. |
| **Fish and Wildlife Management Goals** |
| ▪ Manage based on an ecosystem management approach, rather than a single-species paradigm.<br>▪ Employ a systematic approach to managing wildlife resources, using a process that includes inventory, monitoring, modeling, management, assessment, and evaluation.<br>▪ Minimize wildlife-related health risks, safety risks, and environmental damage.<br>▪ Maintain diversity of wildlife in areas on the installation where there will be no conflict with the mission.<br>▪ Comply with applicable laws and regulations.<br>▪ Maintain and involve partnerships with agencies and groups involved in wildlife management. |

| Habitat Management Goals |
| --- |
| ▪ Enhance habitat by providing suitable food and cover for native species while protecting the operational functionality of Defense Distribution Center, Susquehanna's missions.<br>▪ Protect native habitat diversity.<br>▪ Enhance habitat for native species by removing invasive vegetation. |
| **Exotic and Invasive Species Management Goals** |
| ▪ Ensure compliance with environmental legislation, regulations, and guidelines.<br>▪ Control pests and invasive species.<br>▪ Conduct invasive plant monitoring and management on the BRAC GPW, ACP-4, and MS4 wetland mitigation Projects sites and include actions in the inspection and monitoring reports. |
| **Grounds Maintenance Goals** |
| ▪ Lessen or avoid adverse effects from project activities on the overall ecosystem and its sensitive resources.<br>▪ Make maximum use of regionally native plant species and avoid introduction of invasive, exotic species in revegetation and landscaping activities.<br>▪ Reduce maintenance inputs in terms of energy, water, labor, and equipment. |
| **Natural Resources Law Enforcement Goals** |
| ▪ Ensure compliance with state and Federal natural resources laws and regulations.<br>▪ Provide training to personnel responsible for enforcement of applicable laws and regulations. |
| **Outdoor Recreation Goals** |
| ▪ Provide quality outdoor recreation experiences while sustaining ecosystem integrity.<br>▪ Ensure that outdoor recreation activities are not in conflict with mission priorities. |
| **Environmental Awareness, Education, and Outreach Goals** |
| ▪ Provide education opportunities to military personnel and the public.<br>▪ Promote environmental stewardship through training and awareness. |
| **Surrounding Lands Goals** |
| ▪ Coordinate with surrounding landowners on ecosystem-based management of resources and encourage cooperative efforts on adjacent lands that are complementary to the INRMP.<br>▪ Minimize threats to Defense Distribution Center, Susquehanna assets and natural resources from off-site land use. |

**TABLE 5-2. INRMP Subject Area Abbreviations**

| INRMP Resource Management Area | | Abbreviation |
|---|---|---|
| 5.1 | Ecosystem Management | ECO |
| 5.2 | Threatened, Endangered, and Species of Concern | TES |
| 5.3 | Wetlands and Waters of the United States | WT |
| 5.4 | Watershed Management | WM |
| 5.5 | Fish and Wildlife Management | FW |
| 5.6 | Habitat Management | HM |
| 5.7 | Exotic and Invasive Species Management | INV |
| 5.8 | Grounds Maintenance | GM |
| 5.9 | Natural Resources Law Enforcement | LE |
| 5.10 | Outdoor Recreation | OR |
| 5.11 | Environmental Awareness, Education, Outreach Management | EDU |
| 5.12 | Surrounding Lands Management | SR |

## 5.1 Ecosystem Management

It is the goal of ecosystem management at Defense Distribution Center, Susquehanna to conserve biodiversity by managing the ecosystem rather than focusing on a single biotic or abiotic component of the ecosystem (see **Table 5-3**). Ecosystem-focused management at Defense Distribution Center, Susquehanna encompasses both the function and the structure of the ecosystem and the processes that link them.

**TABLE 5-3. Summary of Ecosystem Management Goals**

| Ecosystem Management Goals |
|---|
| ▪ Manage Defense Distribution Center, Susquehanna based on a regional ecosystem approach that conserves biodiversity.<br>▪ Identify natural resources and operational actions that compromise the function and composition of ecosystems and develop remedies through adaptive management.<br>▪ Implement management strategies with consideration of ecological units and timeframes.<br>▪ Support sustainable, multiple-use human activities.<br>▪ Apply ecosystem-based management through implementation of the INRMP and other installation plans and programs. |

The ecosystem management issues, and associated objectives and actions are presented as follows.

### 5.1.1 ECO-1. Communication of Ecosystem Management Philosophy to Installation Personnel and Visiting Units

**Concern:** There is an ongoing need for coordination between Defense Distribution Center, Susquehanna and other agencies, and between the Defense Distribution Center, Susquehanna and interested and affected public entities during plan development and implementation to manage the ecosystem effectively.

**Objective:** Develop the coordination necessary between Defense Distribution Center, Susquehanna, other agencies, and public entities to ensure that an effective and viable ecosystem management approach is developed.

**Actions:**

1. Complete this version of the INRMP and use it as a beginning point to develop an ecosystem management approach to natural resources management.
2. Work with offsite land managers to develop partnerships that would allow the restoration of habitat for federally listed species on their lands.
3. Develop a process and schedule for coordinating with agencies to allow for agency comment on management plans.
4. Define and identify the ecosystems and explain the purpose and drivers of the management with specific success criteria, adaptive management, and reporting requirements.

**Success Criteria:** Elimination of the sources of the various ecosystem stressors is an indication of successful ecosystem management.

### 5.1.2 ECO-2: Ecosystem Management of Defense Distribution Center, Susquehanna and Mission Requirements

**Concern:** Conceptually, ecosystem management is an appropriate strategy for managing installation natural resources. Pragmatically, the approach is not currently defined well enough to develop an integrated management plan that will guide natural resources management.

Additionally, the intricately connected components of the Defense Distribution Center, Susquehanna ecosystem are not well understood across time and across large geographic areas.

**Objective:** Develop an effective natural resources management approach that integrates all ecological components into a comprehensive management program.

**Actions:**

1. Foster landscape-scale thinking among installation staff and provide them with appropriate training if needed.
2. Implement actions, once plans are developed or revised, identified in the INRMP.

**Success Criteria:** Periodically review management program to ensure that management actions continue to foster ecosystem management while meeting the installation mission.

## 5.2 Threatened, Endangered, and Species of Concern

An installation's overall ecosystem management strategy must provide for protection and recovery of threatened and endangered species. Under the ESA, an "endangered species" is defined as any species that is in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Species of concern include federally listed candidate species; state-listed threatened or endangered,

candidate, or species of concern; migratory birds; and birds listed on the Birds of Conservation Concern list. The USFWS has also presented an updated list of species that are regarded as candidates for possible listing under the ESA. Although candidate species receive no statutory protection under the ESA, the USFWS believes it is important to advise government agencies, industry, and the public that these species are at risk and could warrant protection under the Act.

General management actions for listed species include the following:

- Preparation and implementation of specific management actions for listed species that include protocols for monitoring surveys and for site marking of sensitive areas
- Implement Environmental Review requirements in accordance with AR 200-1
- Conduct Environmental Awareness briefings as necessary
- Minimization and conservation measures aimed at reducing the potential for accidental take
- Investigating and implementing research projects to understand better the ecological requirements of listed and species of concern
- Investigation and implementation of habitat improvement and nonnative species control to conserve listed species.

If threatened, endangered, or species of concern are discovered on the installation during a biotic inventory, species information and management actions should be incorporated into the INRMP. **Figure 5-1** presents an endangered species coordination decision chart that should be used as part of the planning process for projects that could impact known or potential future populations of threatened or endangered species on the installation.

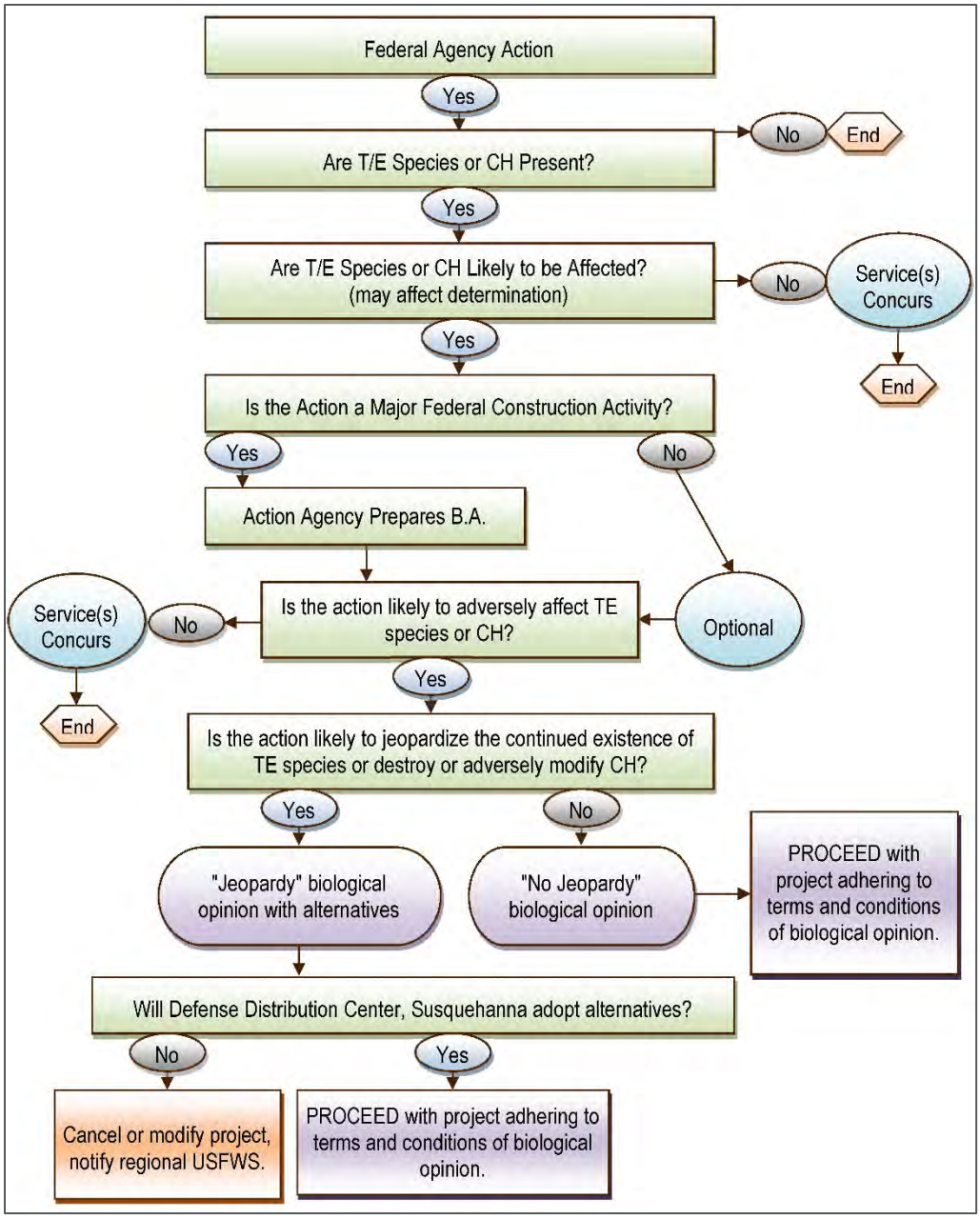


**FIGURE 5-1. Federally and State-listed Species Coordination**

Drivers and objectives for management of threatened, endangered, and species of concern, and critical habitats, are presented below. As summarized in **Table 5-4**, the goal for this section is to manage Defense Distribution Center, Susquehanna on a regional ecosystem-based approach that manages threatened, endangered, and species of concern while protecting the operational functionality of the mission. While single-species management is not promoted as a general philosophical management approach on the installation, specific controls are used to protect threatened, endangered, and species of concern beyond management of the ecosystem. Other procedures in place for management of threatened, endangered, and species of concern are modifying the ecosystem and human interactions within this environment.

**TABLE 5-4. Summary of Threatened, Endangered and Species of Concern Management Goals**

| Threatened, Endangered, and Species of Concern Management Goals |
|---|
| ▪ Manage Defense Distribution Center, Susquehanna on a regional ecosystem-based approach that manages sensitive species and their associated ecosystems while protecting the operational functionality of Defense Distribution Center, Susquehanna's missions.<br>▪ Ensure that Defense Distribution Center, Susquehanna remains in compliance with the ESA and appropriate state regulations.<br>▪ Promote natural resources and ecosystem management in the local region that benefits the functionality of the ecosystems.<br>▪ Protect sensitive wildlife habitats on Defense Distribution Center, Susquehanna. |

The threatened and endangered species and critical habitats topics of concern and associated objectives and actions are presented as follows.

### 5.2.1 TES-1: Federally Listed Species Management

**Concern:** There are no federally listed species that are known to be present on Defense Distribution Center, Susquehanna. However, should listed species occur on the installation, Defense Distribution Center, Susquehanna is prepared to implement requirements under the ESA and specifically provide adequate management or protection by modifying this INRMP accordingly.

**Objective:** Confirm the presence or absence of threatened and endangered species and species of concern.

**Actions:**

1. Continue to conduct floristic and fauna surveys at established intervals (every three to five years) to determine any changes to the state of federally listed plants/animals located on the installation. If a candidate, threatened, or endangered species is discovered, management actions will be developed and incorporated into this INRMP to fulfill the requirements of the ESA and state legislation (i.e., to provide adequate management or protection).
2. Maintain a listed plant and animal species list for Defense Distribution Center, Susquehanna (see **Table 4-5**).
3. Continue to monitor and survey periodically for sensitive, listed, and candidate species.
4. If listed species are found, or if species already known on the installation become listed, modify this INRMP for adequate management or protection of the species.

### 5.2.2 TES-2: Special Status Species Management

**Concern:** Research is needed on special status species. Special status species include federally listed endangered, threatened, or candidate species; state-listed species, candidate species, or species of concern; and migratory birds and birds listed on the Birds of Conservation Concern list. Studies should include habitat condition assessment and trend analysis, habitat requirements, population surveying, and habitat preservation plans.

**Objective:** Conserve non-federally listed special status plant and animal species on Defense Distribution Center, Susquehanna to the degree possible with available funding.

**Actions:**

1. Continue to survey for sensitive species and identify tasks to protect these species when appropriate, subject to availability of funding.
2. Consider state-protected species in all DLA actions on Defense Distribution Center, Susquehanna.
3. Whenever possible, use actions designed for federally listed species to protect or manage other sensitive species.
4. If the plant or animal species of concern are present on Defense Distribution Center, Susquehanna, develop a program to avoid these species during military activities whenever possible.

### 5.2.3 TES-3: Special Status Species Habitat Protection

**Objective:** Maintain high-quality habitats for special status species, in particular seasonal and perennial wetlands, riparian areas, and grasslands. Maintain viable populations of special status species on Defense Distribution Center, Susquehanna where possible.

**Actions:**

1. Continue monitoring listed species as described in this INRMP and adapt monitoring and management actions as needed. Use monitoring information and other information gleaned to guide adaptive management.
2. Initiate habitat improvement projects to conserve biodiversity and protect plant and animal habitats, as funding is available and when such projects will not adversely affect the military mission (e.g., limited habitat disturbance where such disturbance will promote native plant growth, preventing habitat disturbance when this will promote native plant growth, and revegetation with native plants).
3. Periodically review the natural resources management program to ensure that management actions do not adversely impact species of concern habitat. Ensure that Project-specific measures set forth through coordination with local, state, and Federal agencies are implemented and reflected in updates and revisions of this INRMP.

### 5.2.4 TES-4: Special Status Species Awareness

**Concern:** Mission activities might impact these species of concern, as personnel might not be aware of how to identify and avoid these species.

**Objective:** Minimize the potential for adverse effect on special status species from installation activities.

**Actions:**

1. Implement species-specific and overall conservation and monitoring measures described in this INRMP and those developed in future biological opinions.

2. Develop special status species identification sheets for distribution to ~~training~~ maintenance crews, operations and visiting personnel. Provide information on how to avoid impacting these species while conducting ~~training~~ operations. Provide an environmental coordination map, which includes the following information: a) regulated areas in which activity restrictions are in place; and b) special status species locations where pre-planning efforts might be necessary.
3. Continue use of the established Environmental Review process to identify actions that result in adverse effects on special status species or habitats. Coordinate measures with the proponent to reduce adverse effects.
4. Continue to implement land-use regulations developed by Defense Distribution Center, Susquehanna.
5. Periodically review the natural resources management program to ensure that management actions do not impact special status species adversely.
6. ~~Provide an environmental coordination map, which includes the following information:~~

   ~~a. Regulated areas in which activity restrictions are in place~~

   ~~b. Special status species locations where pre-planning efforts might be necessary.~~
7. Ensure that construction personnel are made aware of Project-specific stipulations that are required by Federal and state permits and authorizations to minimize impacts to sensitive species and habitats.

### 5.2.5 TES-5: Northern Long-eared Bat Protection

**Concern:** Defense Distribution Center, Susquehanna is within an area occupied by a northern long-eared bat maternity colony and within the swarming radius of a hibernaculum.

**Objective:** Minimize impacts on foraging and roosting bats.

**Actions:**

1. Avoid or minimize impacts on forests, woodlots and forested fence rows. Configure projects to avoid and/or minimize impacts on suitable summer and swarming habitat, particularly in and around wetlands and riparian areas.
2. Retain at least a 50-foot forested buffer (but preferably a 100-150-foot buffer) on each side of streams and around wetlands.
3. Co-locate project features (e.g., roads and utility lines) and cluster project features (e.g., houses) to reduce forest clearing.
4. Seasonal restriction on tree cutting: Only cut trees when northern long-eared bats are hibernating or concentrated near their hibernacula. For project areas affecting northern long-eared bat swarming habitat (near hibernacula), only cut trees between November 15 and March 31. For project areas affecting summer habitat, only cut trees between October 15 and March 31.

   *Note: Incidental take of NLEB as a result of hazardous tree removal to protect human life or property is not prohibited. You do not need a permit to remove hazardous trees.*

5. Phase tree clearing over multiple years, if applicable to the project. Indicate the rate at which forest will be cleared, as well as the total duration of this effect (e.g., 5 acres/year for 10 years).
6. Reforest temporarily cleared areas with tree species preferred by northern long-eared bats. Ensure soils are segregated during earth disturbance activities and ensure soils are not compacted, to allow for successful tree establishment.
7. Avoid use of invasive, exotic plant species when re-foresting and when stabilizing soils.
8. Develop and implement stringent erosion and sedimentation controls to protect water quality and the northern long-eared bat prey base in streams and wetlands.
9. For forest habitat loss resulting from the project that will not be addressed through reforestation under measure #6, provide for the short and long-term habitat needs of the northern long-eared bat by offsetting the effects of this loss. This can be done through the conservation of existing, currently unprotected forest habitat or use of an in-lieu fee program that conserves forest habitat for northern long-eared bats.

### 5.2.6 TES-6: Northern Long-eared Bat Habitat Management

**Concern:** The ESA requires all Federal agencies to do what they can to protect and recover endangered and threatened species.

**Objective:** Manage forested habitat for the federally threatened northern long-eared bat and the endangered Indiana bat.

**Actions:**

1. ~~Based on available funding, release potential roost trees. In areas where preferred tree species such as hickories and oaks are present, younger trees will be released by removing or thinning undesirable and competing trees in areas surrounding them.~~ Actively manage forested habitat for the federally threatened northern long-eared bat and the endangered Indiana bat by releasing roost trees and controlling invasive species in potential habitat.
2. ~~As funding allows, control invasive plant species to maintain a healthy forest for bats. Invasive species include striped maple, Norway maple (*Acre platanoides*), privet, tree-of-heaven, Japanese barberry and multi-flora rose (*Rosa multiflora*).~~
3. Implement the USFWS Forest Management Guidelines northern long-eared bat summer habitat and swarming habitat detailed below.

Forest Management Guidelines in Summer Habitat and Swarming Habitat

- Retain at least 60 percent canopy closure within forest stands. Canopy closure is the percentage of the sky obscured by tree canopy when viewed from various positions within the forest stand.
- Retain all snags, except where they pose a serious human safety hazard due to their location near a building, yard, road or powerline. A tree with less than 10 percent live canopy should be considered a snag. When possible, delay removal of hazard trees until

bats are hibernating or concentrated near their hibernacula (between October 1 and March 31).

- Do not harvest or manipulate shagbark hickory trees unless the density of shagbark hickory exceeds 16 trees per acre. If present, maintain at least 16 live shagbark hickory greater than 11-inch dbh (diameter at breast height) per acre. If there are no shagbark hickory trees greater than 11-inch dbh to leave, then the 16 live shagbark hickory trees per acre must include the largest specimens in the stand.
- The following species of trees have been identified as having relatively high value as potential Indiana bat roost trees:

| | |
|---|---|
| shagbark hickory (*Carya ovata*) | eastern cottonwood (*Populus deltoides*) |
| bitternut hickory (*Carya cordiformis*) | northern red oak (*Quercus rubra*) |
| mockernut hickory (*Carya tomentosa*) | scarlet oak (*Quercus coccinea*) |
| pignut hickory (*Carya glabra*) | black oak (*Quercus velutina*) |
| other hickories (*Carya* spp.) | white oak (*Quercus alba*) |
| silver maple (*Acer saccharinum*) | chestnut oak (*Quercus prinus*) |
| sugar maple (*Acer saccharum*) | slippery elm (*Ulmus rubra*) |
| red maple (*Acer rubrum*) | American elm (*Ulmus americana*) |
| green ash *(Fraxinus pennsylvanica*) | black locust (*Robinia pseudoacacia*) |
| white ash (*Fraxinus americana*) | |

- At least three live trees per acre greater than a 20-inch dbh (of the species listed above) should always be maintained in the stand. These must be the largest trees of these species in the stand. An additional six live trees per acre greater than a 11-inch dbh (of the species listed above) must also be maintained. In areas of the stand where there are no trees greater than a 20-inch dbh to retain, then 16 live trees per acre must be retained, and these must include the largest specimens of the preferred species (see list above) in the stand.
- No harvest or timber stand improvement activities within 100 feet on both sides of perennial streams, and within 50 feet on both sides of intermittent or ephemeral streams.
- Do not cut trees between April 1 and November 15. This corresponds to the reproductive and spring/fall emergence and swarming seasons.
- Do not carry out prescribed burns in forest habitat between April 1 and November 15.

### 5.2.7 TES-7: Bog Turtle Protection

**Concern:** The installation is within the known range of the bog turtle. Potential bog turtle habitat has also been identified at the installation.

**Objective:** Minimize impacts to bog turtles and their habitat when planning for and implementing projects on the installation.

**Actions:**

1. For any project proposed within 300 feet of the Marsh Run wetland complex, consultation with USFWS should be conducted to determine whether a Phase II bog turtle survey ~~should be conducted~~ is required.

2. ~~Submit survey results to USFWS for review and concurrence.~~
3. If bog turtles or their habitat is found, a monitoring plan and additional management objectives will be added to the INRMP to ensure long-term management.
4. Implement avoidance/minimization/construction management measures for Sites 2 and 3 on the MS4 Wetland Restoration Project required by Federal and state Project permits and authorizations to minimize the potential to kill or harm the bog turtle (see **Appendix G.3**, correspondence dated September 30, 2019).
5. Ensure a comprehensive summary report of the MS4 Project (Sites 2 and 3) bog turtle construction monitoring is completed by a recognized-qualified bog turtle surveyor and submitted to USFWS within 60 days of Project completion.

## 5.3 Wetlands and Waters of the United States

Wetland management strategies vary depending primarily on the wetland classification, which is determined by the value of a wetland area. A wetland's value is decided by the quality of the functions it provides, including its biomass production, habitat, erosion control, storm water storage, water quality protection, aquifer recharge potential, and low flow augmentation.

Wetland complexes should be managed to benefit various bird and mammal species. Additionally, forested wetland complexes can be enhanced via planting and maintenance of existing plantings of various riparian tree species. The overall objective of such a planting would be to promote forest wetland structure. Riparian buffer integrity should be protected by maintaining healthy riparian vegetation communities. Tree and shrub planting programs should focus on rehabilitating degraded sections of the creek to shade the stream and help control erosion. Many species require protection from deer browsing via tubes or fences if deer are even moderately abundant on the installation. See **Table 5-5** for a summary of wetlands and floodplains goals for Defense Distribution Center, Susquehanna.

**TABLE 5-5. Summary of Wetlands and Waters of the United States Goals**

| Wetlands and Waters of the United States Goals |
|---|
| ▪ Remain in compliance with USACE and Commonwealth of Pennsylvania wetlands regulations. |
| ▪ Minimize the operational impact of Defense Distribution Center, Susquehanna missions on wetlands and floodplains. |
| ▪ Maintain healthy, functional wetlands that can sustain minor operational influences and minor, inadvertent encroachments. |
| ▪ Enhance wetland functionality to maximize societal-based wetland values within local ecosystems. |
| ▪ Maximize floral and faunal diversity of wetland communities in areas that will not affect the military mission. |
| ▪ Manage for no net loss of wetland and floodplain acreage, functions, and values. |
| ▪ Implement the approved compensatory mitigation plan and manage the constructed wetlands as required under the BRAC GPW Project wetland permits. |
| ▪ Implement the approved compensatory mitigation plan and manage the constructed wetlands and streams as required under the ACP-4 Project permits. |
| ▪ Implement the approved compensatory mitigation plan and manage the restoration sites as required under the MS4 Project permits. |

Objectives and management actions for wetlands, waters of the United States, and floodplain protection are presented as follows.

### 5.3.1 WT-1: Management of BRAC GPW Project Wetland Mitigation Site

**Concern:**

Integration of the compensatory wetland mitigation required for wetland impacts incurred from the BRAC General Purpose Warehouse project into the Defense Distribution Center, Susquehanna INRMP and Pest Management Program.

**Objective:** The long-term success of the compensatory wetland mitigation project depends on a commitment to monitor the constructed wetlands and ensure compliance with the wetland permits. The permits and mitigation plan, including monitoring and management goals and objectives, are provided in **Appendix G.1**.

**Actions:**

1. Monitor and manage the compensatory BRAC GPW wetland mitigation site in compliance with the permit requirements. See permit and approved wetland mitigation plan, including monitoring and management, in **Appendix G.1**.
2. Integrate the management goals for the BRAC GPW mitigation project with existing natural resources management programs at Defense Distribution Center, Susquehanna, including the IPMP.
3. Ensure that any changes in statute, regulation, or agency needs or mission will not result in an incompatible use resulting in any loss in function of the compensatory mitigation wetland.
4. Implement the BRAC GPW Remedial Action Plan to include monitoring reports and adaptive management until Special Conditions 1 and 5 of the Permit are achieved.
5. Conduct long-term management through inspections and repair of damage on compensatory wetland mitigation wetlands associated with the BRAC GPW project.

### 5.3.2 WT-2: Wetlands and Waters of the United States

**Concern:** Boundary reassessments every five years as recommended by the USACE during the development of this INRMP (2016).

**Objective:** Maintain quality and quantity, prevent damage, and identify and implement restoration of wetlands and waters of the United States on Defense Distribution Center, Susquehanna.

**Actions:**

1. Maintain and update the wetland inventory data, including wetland distribution and categories.
2. Monitor impacts on wetlands from training maintenance, operations, and visitor activities.

3. Conduct Environmental Review for activities that could affect wetlands.
4. Plan development and training activities to avoid wetland impacts to the maximum extent possible and mitigate unavoidable impacts on wetland functions.
5. Maintain water quality to protect surface waters and wetlands from excessive sediment-laden runoff.
6. ~~Incorporate wetlands conservation education into the Sustainable Range Awareness program.~~
7. ~~Monitor impacts on wetlands from training activities.~~
8. ~~Incorporate BMPs into necessary military operations in and around wetlands.~~

### 5.3.3 WT-3: Pond Wetland Management

**Concern:** An approximately 32-acre pond exists on the installation and provides valuable habitat for wetland-associated wildlife.

**Objective:** Maintain natural vegetation around the perimeter of the pond to provide habitat for bird and mammal wetland associated species.

**Actions:**

1. Maintain a “no mow” zone around the pond
2. Maintain and/or plant native trees, shrubs, and herbaceous plants.
3. Leave existing logs and other woody debris in and around the water as basking areas for turtles and refugia for salamanders, snakes, and small mammals.
4. Control cattails if they begin to dominate more than 50 percent of the wetland.

### 5.3.4 WT-4: Management of ACP-4 Project Wetland and Stream Mitigation Site

**Concern:** Integrate the compensatory wetland mitigation required for wetland and stream impacts incurred from the ACP-4 project into the Defense Distribution Center, Susquehanna INRMP and Pest Management Programs.

**Objective:** Monitor the constructed wetlands and streams to ensure compliance with the permits. The permits and mitigation plan, including monitoring and management goals and objectives, are provided in **Appendix G.2**.

**Actions:**

1. Monitor and manage the compensatory wetland and stream mitigation sites in compliance with the permit requirements. See permit and approved wetland mitigation plans, including monitoring and management, in **Appendix G.2**.
2. Integrate the management goals for the ACP-4 Project with existing natural resources management programs at Defense Distribution Center, Susquehanna, including the IPMP.

3. Ensure that any changes in statute, regulation, or agency needs or mission will not result in an incompatible use resulting in any loss in function of the compensatory mitigation wetland.
4. Inspect and monitor the ACP-4 mitigation site for a minimum of five years (full growing seasons) following initial construction of the project.
5. Prepare annual monitoring reports for submittal to CENAB by 31 December of each year.
6. Identify remedial measures as needed and include the measures for review and approval by CENAB in the annual monitoring reports.
7. Provide long-term management for the ACP-4 Project through inspections and repair of damage.
8. Ensure that any changes in statute, regulation, or agency needs or mission will not result in an incompatible use resulting in any loss in function of the compensatory mitigation wetland.

### 5.3.5 WT-4: Management of MS4 Stream Restoration Site

**Concern:** Integration of the MS4 Stream Restoration Site into the Defense Distribution Center, Susquehanna INRMP and Pest Management Program.

**Objective:** Monitor the constructed wetlands and ensure compliance with the wetland permits. The permits and restoration plan, including monitoring and management goals and objectives, are provided in **Appendix G.3**.

**Actions:**

1. Monitor and manage the wetland restoration sites in compliance with the Federal and state permit and authorization requirements. See permit and approved wetland restoration plans, including monitoring and management, in **Appendix G.3**.
2. Integrate the management goals for the MS4 restoration project with existing natural resources management programs at Defense Distribution Center, Susquehanna, including the IPMP.
3. Ensure that any changes in statute, regulation, or agency needs or mission will not result in an incompatible use resulting in any loss in function of the restored wetland.
4. Inspect and monitor the MS4 mitigation site for a minimum of five years (full growing seasons) following initial construction of the project.
5. Prepare annual monitoring reports for submittal to CENAB by 31 December of each year.
6. Identify remedial measures as needed and include the measures for review and approval by CENAB in the annual monitoring reports.
7. Provide long-term management for the MS4 mitigation project through inspections and repair of damage.

## 5.4 Watershed Management

Watershed management is important to natural resources management because it directly affects both surface water and groundwater quality and is critical to maintain valuable aquatic habitats. A summary of the watershed management drivers is presented in **Table 5-6**.

**TABLE 5-6. Summary of Watershed Management Goals**

| Watershed Management Goals |
|---|
| ▪ Reduce/control nutrient and sediment inputs into the watershed that degrade water quality.<br>▪ Manage the repair and installation of roads in a manner that minimizes the potential for erosion and sedimentation.<br>▪ Minimize nonpoint source pollution of both surface and groundwater in the watershed through the implementation of BMPs.<br>▪ Continue surface water monitoring program under NPDES.<br>▪ Understand ecosystem dynamics within the watershed to prevent or respond to threats to its integrity.<br>▪ Maintain vegetation buffers on waterways/riparian corridors. |

The watershed protection topics of concern and associated goals and objectives are presented as follows.

### 5.4.1 WM-1: Continue Water Quality Monitoring Program for Surface Waters

**Concern:** There is the potential for point source and nonpoint source contamination from pollutants, sedimentation, and nutrients, especially waters downstream from the cantonment area and parking sites. Pollutants can degrade water quality in surface waters and violate provisions of the CWA.

**Objective:** Maintain high quality surface waters to support viable populations of native aquatic and terrestrial life. Remain in compliance with ESA, CWA, and other regulatory drivers.

**Actions:**

1. Implement provisions of the SWPPP to include BMPs, monitoring, reporting, and modifying BMPs as needed and as required by project-specific and general permits.
2. ~~To maximum extent feasible, maintain 100-foot buffer between wetlands, riparian areas, or drainages and construction or other ground-disturbance areas in accordance with American Society of Heating, Refrigerating and Air-Conditioning Engineers Standard 189.1, as part of the Army Sustainability Policy; and maintain 50-foot buffer between minor drainages and construction or disturbance.~~
3. Monitor groundwater to include drinking water per the Safe Drinking Water Act, monitoring for suspected pollution sources, and monitoring at known plumes.
4. Maintain and implement the Integrated Contingency Plan (DLA 2018b).
5. Maintain and implement the CBPRP (DLA 2018a).

6. Implement the MS4 Project Erosion and Sediment Control Plan or equivalent (DLA 2017).

## 5.5 Fish and Wildlife Management

For the purposes of this INRMP, wildlife management is defined as manipulation of the environment and wildlife populations to produce desired objectives. The primary goal of wildlife management at Defense Distribution Center, Susquehanna is to maintain wildlife populations at levels compatible with land use objectives while promoting the existence, importance, and benefits of nongame species. Defense Distribution Center, Susquehanna management activities include minimal direct wildlife management. The primary focus of management involves habitat management. Nesting structures for birds and mammals currently are present on the installation and are appropriate, but must be accompanied by regular, seasonal maintenance to limit use by undesired species (e.g., house sparrows in bluebird boxes, pigeons in barn owl boxes). Additional wood duck boxes, mallard tubes, an osprey platform, kestrel boxes, barn owl boxes, and bat boxes could be installed, however they would also require yearly maintenance.

A summary of the Fish and Wildlife management goals is provided in **Table 5-7**.

**TABLE 5-7. Summary of Fish and Wildlife Management Goals**

| Fish and Wildlife Management Goals |
|---|
| ▪ Manage based on an ecosystem-management approach, rather than a single-species paradigm.<br>▪ Employ a systematic approach to managing wildlife resources, using a process that includes inventory, monitoring, modeling, management, assessment, and evaluation.<br>▪ Minimize wildlife-related health risks, safety risks, and environmental damage.<br>▪ Maintain diversity of wildlife in areas on Defense Distribution Center, Susquehanna where there will be no conflict with the mission.<br>▪ Comply with applicable laws and regulations.<br>▪ Maintain and promote partnerships with agencies and groups involved in wildlife management. |

The fish and wildlife management topics of concern and associated objectives and actions are presented as follows.

### 5.5.1 FW-1: General Wildlife Management

**Concern:** Biotic surveys are conducted every 10 years. These data are cross-referenced with current threatened, endangered, species of concern, and noxious weed lists to ensure that management actions are appropriate. Other agencies, including the PAFBC, PAGC, PADCNR, and USFWS, have responsibility for managing wildlife on Defense Distribution Center, Susquehanna.

**Objective:** Establish a general wildlife population trend monitoring program as a component of long-term ecological trend monitoring.

**Actions:**

1. Continue to do biotic surveys every 10 years to monitor significant changes in wildlife species or populations present on Defense Distribution Center, Susquehanna (raptor surveys are performed every three years).
2. Maintain an updated inventory of plants and animals present on Defense Distribution Center, Susquehanna.
3. Ensure that the natural resources staff members responsible for wildlife management and conservation obtain focused training regarding management of these resources as related to conservation on a military installation on an annual basis.
4. Monitor species and communities that are components of prey habitat or indicators of ecosystem integrity, status of sensitive species, and maintaining the capability of Defense Distribution Center, Susquehanna to support military missions. Specifically, monitoring includes implementation of the following surveys within the planning period:
    a. Bird (raptor and non-raptor) survey
    b. Small mammal survey
    c. Reptile survey
    d. Amphibian survey
    e. Plant survey (including invasive/noxious plants).
5. Continue documenting nongame species that are incidentally observed during species of concern surveys.
6. Periodically review the monitoring program to ensure it still meets ecosystem management drivers.

### 5.5.2 FW-2: Compliance with Migratory Bird Treaty Act

**Concern:** The MBTA prohibits "take" of migratory birds except by permit; permit requirements are exempt for military training but not for construction, operations, or maintenance of a military installation. Permits will only be sought if necessary, for intentional take.

**Objective:** Comply with MBTA and minimize incidental loss of migratory and non-migratory birds.

**Actions:**

1. Conduct surveys of activity sites as needed to determine if migratory bird nests are present and active. If necessary, Defense Distribution Center, Susquehanna will apply for an appropriate permit for intentional take of migratory birds.
2. Participate in the Partners in Flight initiatives as appropriate.
3. Work with project proponents and Defense Distribution Center, Susquehanna directorates to develop effective management for minimizing the unintentional take of migratory birds.
4. Identify BASH potential to the adjacent airfield.
5. Avoid and minimize impacts on migratory birds in and around the installation as individual projects are developed:

a. Where disturbance is necessary, clear natural or semi-natural habitats (e.g., forests, woodlots, reverting fields, shrubby areas) and perform maintenance activities (e.g., mowing) between September 1 and March 31, which is outside the nesting season for most native bird species. Without undertaking specific analysis of breeding species and their respective nesting seasons on the project site, implementation of this seasonal restriction will avoid take of most breeding birds, their nests, and their young (i.e., eggs, hatchlings, fledglings).

b. Minimize land and vegetation disturbance during project design and construction. To reduce habitat fragmentation, collocate roads, fences, laydown areas, staging areas, and other infrastructure in or immediately adjacent to already disturbed areas (e.g., existing roads). Where this is not possible, minimize roads, fences, and other infrastructure.

c. Avoid permanent habitat alterations in areas where birds are highly concentrated. Examples of high concentration areas for birds are wetlands, state or Federal refuges, Audubon Important Bird Areas, private duck clubs, rookeries, roosts, and riparian areas. Avoid establishing sizable structures along known bird migration pathways or known daily movement flyways (e.g., between roosting or feeding areas).

d. Develop a habitat restoration plan for the proposed site that avoids or minimizes negative impacts on vulnerable wildlife. Use only plant species that are native to the local area for revegetation of the project area.

### 5.5.3 FW-3: External Assistance

**Concern:** The rapid development of natural resources management combined with DOD personnel cutbacks have resulted in the highest need ever for outside assistance with natural resources programs.

**Objectives:** Provide external specialized skills, personnel, and resources to support Defense Distribution Center, Susquehanna natural resources program regarding fish and wildlife management.

**Actions:**

1. Use state and Federal agencies to assist with fish and wildlife management.
2. Explore opportunities to conduct research through universities to assist with fish and wildlife management.
3. Use contractors to assist with fish and wildlife management. A variety of projects could use the support of contractors in the next five years.
4. Explore collaborative opportunities with local Boy Scout troops, Girl Scout troops, and other community organizations to complete specific tasks to benefit the natural resources on Defense Distribution Center, Susquehanna.

## 5.6 Habitat Management

Habitat management is a broad term that encompasses a whole range of management issues that affect fish and wildlife, threatened and endangered species, and ecosystem drivers.

A summary of the habitat management drivers is provided in **Table 5-8**.

**TABLE 5-8. Summary of Habitat Management Goals**

| Habitat Management Goal |
|---|
| ▪ Enhance habitat by providing suitable food and cover for native species while protecting the operational functionality of Defense Distribution Center, Susquehanna's missions.<br>▪ Protection of native habitat diversity.<br>▪ Enhance habitat for native species by removing invasive vegetation. |

Objectives and management actions for habitat management are presented as follows.

### 5.6.1 HM-1: Soil Resources Management

**Concern:** Soil erosion and compaction results in lack of protective vegetation cover, degrades surface water quality, adversely affects sensitive plant habitats, and creates dangerous conditions for vehicle travel. Soil erosion from human disturbance is associated with construction development and maintenance and use of existing dirt roads and highly used sites.

**Objective:** Minimize compaction and erosion from current and future activities. Identify and restore eroded sites.

**Actions:**

1. Monitor construction projects and coordinate with Roads and Grounds if heavy equipment work is needed.
2. Tailor land uses to appropriate soil types.
3. Survey areas on post where soil erosion and compaction might occur to ensure that BMPs within the erosion and sedimentation plan are implemented and effective.
4. ~~Implement recommendations from erosion survey.~~ Seed with predominantly native seed mixtures or restore as needed.
5. Work with project proponents to identify potential erosion sites. Identify additional sites for land rehabilitation planning.
6. Require all earth-moving activities (including contractor operations) to comply with the erosion and sedimentation plan.

### 5.6.2 HM-2: Timber Stand Improvement

**Concern:** There is moderate vertical diversity (vertical layers of vegetation) found throughout much of the installation. Vertical structure is important to many wildlife species. For example, wood thrush nest in trees and shrubs 3-20 feet above the ground but forage for insects in foliage on the ground. Vertical structure also benefits small mammals by providing cover from predators.

**Objective:** Improve vertical diversity by creating a well-structured canopy, midstory, and understory which is beneficial to many wildlife species.

**Actions:**

1. Daylight desired trees (oak, cherry and hickory) so that they grow faster, produce larger annual mast yields, and increase sunlight to the forest floor for optimal seedling regeneration.
2. Temporarily identify the desired trees by marking them with a bright colored band of flagging. General criteria to look for when selecting desired trees include dominant and codominant trees that are at least 25 feet tall, trees that have large healthy crowns (dead branches acceptable for wildlife), hard mast over soft mast, conifers, trees that have an expected longevity of 20+ years, and trees with cavities and large dead branches (for wildlife).
3. Place a contrasting color of flagging around all of the trees that are going to be removed (ones that are in direct competition with the desired trees). Trees can also be girdled to create openings in the canopy and create wildlife habitat.

## 5.7 Exotic and Invasive Species Management

Exotic and invasive species management is a large part of pest management activities. The Federal Noxious Weed Act and EO 13112 require Federal agencies to control noxious and invasive species on Federal lands. EO 13112 requires that Federal agencies prevent the introduction of invasive species, detect and control populations of invasive species, and restore native species and habitat conditions in ecosystems that have been invaded.

A summary of invasive species management drivers is provided in **Table 5-9**.

**TABLE 5-9. Summary of Exotic and Invasive Species Management Goals**

| Exotic and Invasive Species Management Goals |
|---|
| ▪ Ensure compliance with environmental legislation, regulations, and guidelines.<br>▪ Control pests and invasive species |

Objectives and management actions for invasive species management are presented below.

### 5.7.1 INV-1: Invasive Species Control

**Concern:** Comprehensive control of invasive and nonnative plant species should be a part of any overall site management and restoration program.

**Objective:** Develop and implement a weed prevention and management plan for wetland mitigation sites or any newly developed areas on the installation.

**Actions:**

1. Focus on the species and communities desired in place of the "weed" species, rather than on simply eliminating undesirable species. The species and communities desired will depend upon the management goals for a specific area.
2. Establish BMPs such as seed testing with the *Rules for Testing Seed*, published by the Association of Official Seed Analysts during landscaping projects to prevent new species from becoming established on the Defense Distribution Center, Susquehanna.
3. Include language in contracts with construction companies to prevent the introduction or spread of invasive plant species on the installation. The PADCNR provides suggestions for specific contract language to be incorporated into new construction as well as landscape maintenance as well as more information on weed prevention plans. ~~(*http://www.dcnr.state.pa.us/forestry/invasivetutorial/Prevention.htm#suggested*)~~
4. Consider control of species listed as a minor infestation level to prevent the spread and increase of these species. The *Invasive and Nonnative Species Management Plan* (DLA 2009d) suggests priorities for the control or elimination of invasive and nonnative plant species listed as a severe infestation level located in high priority natural areas on the installation.

### 5.7.2 INV-2: Wetland Mitigation and Restoration Site Invasive Species Control

**Concern:** Invasive plant species have the potential to degrade mitigation and restoration efforts implemented on and adjacent to all wetland mitigation project sites.

**Objective:** Existing mitigation areas require specific control of invasive species in order to ensure compliance with state and Federal permits and authorizations.

**Actions:**

1. Implement site-specific management of non-native and invasive plant species related to the BRAC GPW, ACP-4 and MS4 Project sites.

2. Monitor for the efficacy of control techniques of invasive plants at the compensatory wetland mitigation sites and apply adaptive management when appropriate.

3. Monitor for the spread of existing invasive plant populations as well as establishment of new infestations or species long-term at the mitigation sites.

## 5.8 Grounds Maintenance

In the process of identifying facilities and grounds maintenance actions, a list of goals was generated that was used to create ecologically sustainable management objectives. These goals are summarized in **Table 5-10**.

**TABLE 5-10. Summary of Grounds Maintenance Goals**

| Grounds Maintenance Goals |
|---|

- Lessen or avoid adverse effects from project activities on the overall ecosystem and its sensitive resources.
- Make maximum use of regionally native plant species and avoid introduction of invasive, exotic species in revegetation and landscaping activities.
- Reduce maintenance inputs in terms of energy, water, manpower, and equipment.
- Ensure compliance with environmental legislation, regulations, and guidelines.
- Control pests and invasive species.

Objectives and management actions for grounds maintenance are presented as follows.

### 5.8.1 GM-1: Integrated Pest Management

**Concern:** Pests can transmit diseases, compete with and have other negative effects on flora and fauna, and damage real property.

**Objective:** Control those plant and animal species that adversely affect natural resources management (e.g., reduce ecosystem functionality, displace native species) or affect the military mission or facilities on Defense Distribution Center, Susquehanna per the IPMP.

**Actions:**

1. Ensure compliance with environmental legislation, regulations, and guidelines.
2. Implement pest management controls from the IPMP and other pest-related guidance and plans.
3. Continue to update the IPMP to ensure that the plan reflects changes in populations and current management issues.

### 5.8.2 GM-2: Eradication of Nonnative and Invasive Plant Species During Revegetation and Landscaping Activities

**Concern:** Nonnative and invasive species could be endangering populations of sensitive native species and creating lower quality habitat available for wildlife.

**Objective:** Determine the extent of nonnative and invasive plant species on the installation. Eradicate invasive species using methods that will cause the least disturbance of native species that might be present. Reseed with plant species that are well-adapted to the growing conditions in the eastern Pennsylvania area. Develop and adopt proactive management measures to control the proliferation of invasive species.

**Actions:**

1. During grounds maintenance activities, identify areas where invasive species occur and develop specific management actions to target the populations of these species.
2. For landscaping, use plants that are native to the local region as much as possible, or those that are not known to be invasive.

3. If necessary, coordinate with state and local regulators to obtain appropriate permits for nonnative and nuisance plant species eradication in wetland areas.

## 5.9 Conservation Law Enforcement

Enforcement of hunting, fishing, and trapping on Defense Distribution Center, Susquehanna is influenced by laws and regulations that include Defense Distribution Center, Susquehanna regulations, the SAIA and other Federal laws and regulations, and Pennsylvania Game and Fish Laws.

Natural resources enforcement currently focuses on hunting and fishing regulations. Every effort should be made to increase the enforcement of additional regulations such as endangered species protection, cultural resources protection, wetland protection, and aquatic pollution prevention.

A summary of the law enforcement goals is provided in **Table 5-11**.

**TABLE 5-11. Summary of Natural Resources Law Enforcement Goals**

| Natural Resources Law Enforcement Goals |
|---|
| ▪ Ensure compliance with state and Federal natural resources laws and regulations.<br>▪ Provide training to personnel responsible for enforcement of applicable laws and regulations. |

Objectives and management actions for law enforcement are presented as follows.

### 5.9.1 LE-1: Natural Resources Enforcement

**Concern:** Protocols need to be established with enforcement personnel of the responsible organization to inform the Real Property Engineer of criminal trespass, who will in turn contact the County Sheriff or U.S. Marshall's office.

**Objective:** Eliminate unauthorized activities on Defense Distribution Center, Susquehanna.

**Actions:**

1. Coordinate with the York County Sheriff and other enforcement personnel to identify appropriate enforcement procedures.
2. Defense Distribution Center, Susquehanna personnel should attend the National Military Fish and Wildlife Association annual training for experienced wardens and provide information obtained to range personnel, the County Sheriff and other enforcement personnel.
3. Cooperate with other agencies, particularly the USFWS, PAFBC, PAGC, and PADCNR, to ensure that natural resources laws are adequately enforced.
4. Periodically review Federal and state laws and regulations to ensure natural resources laws and regulations are adequately enforced.

## 5.10 Outdoor Recreation and Public Access

The Sikes Act and DOD Directive 4715.03, *Natural Resources Management Program*, allow for public access onto DOD lands for the enjoyment and use of natural resources, if such use and access are compatible with the military mission and if the ecosystem can support such use. The DLA is a trustee of public land and has a responsibility to protect and enhance environmental quality, conserve natural resources, and provide opportunities for outdoor recreation. However, it must be recognized that land under DLA control was acquired solely for national defense purposes. Other uses are, therefore, secondary to mission needs.

The Recreation land use zone at Defense Distribution Center, Susquehanna is generally in the north/northwest portion of the installation. The Recreation land use zone includes indoor and outdoor recreation opportunities such as the Riverview Golf Course, Fitness Center, Swimming Pool, and Picnic Pavilions. There is also a 6-lane Bowling Center on the installation. The recreation areas are intermingled within the community support and housing functions and open space. A summary of the outdoor recreation goals is provided in **Table 5-12**.

**TABLE 5-12. Summary of Outdoor Recreation Management Goals**

| Outdoor Recreation Management Goals |
|---|
| ▪ Provide quality outdoor recreation experiences while sustaining ecosystem integrity. |
| ▪ Ensure that outdoor recreation activities are not in conflict with mission priorities. |

Objectives and management actions for outdoor recreation are presented as follows.

### 5.10.1 OR-1: Public Access, General Safety, and Security

**Concern:** The consequences of public access regarding general safety and the operational security of the mission should be evaluated.

**Objective:** Establish and incorporate a public access protocol.

**Action:**

1. Create a public access protocol.

## 5.11 Public Outreach

Defense Distribution Center, Susquehanna has a goal of promoting environmental partnership and stewardship. The goal can be reached by increasing public awareness of environmental programs, educating the workforce about the installation's environmental programs, and training customers on installation environmental requirements. See **Table 5-13** for a summary of outreach and education management goals.

**TABLE 5-13. Summary of Environmental Awareness, Education, and Outreach Management Goals**

| Environmental Awareness, Education, and Outreach Management Goals |
|---|
| ▪ Provide education opportunities to military personnel and the public. |
| ▪ Promote environmental stewardship through training and awareness. |

Objectives and management actions for outreach and education are presented as follows.

### 5.11.1 EDU-1: Conservation Awareness

**Concern:** Conservation awareness is instrumental in creating conditions needed to manage natural resources. A conservation awareness program must be directed to both installation and external interests if it is to be effective.

**Objectives:** Provide information to internal and external interested communities regarding natural resources and associated management programs on Defense Distribution Center, Susquehanna.

**Actions:**

1. Improve the general program knowledge of all persons associated with Defense Distribution Center, Susquehanna, particularly those who come into regular contact with interested persons.
2. Use newspapers, the Web site, and special displays to inform the surrounding community of matters important to Defense Distribution Center, Susquehanna natural resources program.
3. Participate in Earth Day and other organized events, as appropriate, and evaluate other special events for their usefulness in promoting a stewardship image and conservation commitment regarding Defense Distribution Center, Susquehanna.

### 5.11.2 EDU-2: Outreach and Education

**Concern:** Outreach and education is important to provide support for natural resources management at Defense Distribution Center, Susquehanna.

**Objective:** Create a conservation ethic in land users to minimize potential damages to natural resources.

**Actions:**

1. Engage local community groups and encourage the public to participate in natural resources activities conducted at Defense Distribution Center, Susquehanna (i.e., Christmas bird counts).
2. Establish a watchable wildlife program.
3. Educate the local community, installation personnel, and tenants about the installation natural resources program.
4. Periodically review outreach and education materials to ensure that each is still current and meeting drivers of the outreach and education program.

### 5.11.3 EDU-3: Personnel Training

**Concern:** Environmental education and communication with installation staff, tenants, and the public is a keystone of successful environmental management. Additionally, professional training for natural resources staff is critical to stay up to date with current technology and studies, and maintain an effective and professional program.

**Objective:** Educate military and civilian users and Defense Distribution Center, Susquehanna workforce on environmental programs on the installation to maintain compliance with environmental laws and minimize impacts on natural and cultural resources.

**Actions:**

1. Encourage natural resources staff to join professional societies and their state/regional chapters and to be active in them.
2. Strive to send at least one person to each of the following annual workshops or professional conferences/training:
    a. National Military Fish and Wildlife Association annual workshop
    b. GIS/remote sensing training.
3. Evaluate other conferences/workshops for their usefulness as training tools and send personnel to those most justified, based on current training needs and those most related to Defense Distribution Center, Susquehanna activities.
4. Ensure that natural resources personnel obtain the one-time or occasional refresher training needed to fulfill job requirements (e.g., GIS user training, NEPA training, endangered species documentation/consultation training).
5. Actively participate in training sessions to disseminate knowledge learned on Defense Distribution Center, Susquehanna.

## 5.12 Surrounding Lands

Offsite land use has the potential to affect Defense Distribution Center, Susquehanna plans, programs, and activities. Offsite management by nearby landowners should be considered in the implementation of the management actions identified in this INRMP. Offsite development has the potential to affect the natural resources or mission priorities discussed in this INRMP. See **Table 5-14** for a summary of surrounding lands management goals.

**TABLE 5-14. Summary of Surrounding Lands Management Goals**

| Surrounding Land Goals |
|---|
| ▪ Coordinate with surrounding landowners on the ecosystem-based management of resources and encourage cooperative efforts on adjacent lands that are complementary to the INRMP.<br>▪ Minimize threats to Defense Distribution Center, Susquehanna assets and natural resources from offsite land use. |

# 6 INRMP Review, Update, and Implementation

## 6.1 Organization and Personnel

The INRMP Program has been organized to ensure the implementation of year-round, cost-effective management activities and projects that meet the requirements of the DLA. Professionally trained natural resources management staff and natural resources enforcement are required to implement this INRMP. The SAIA defines a “professional” as one who has an undergraduate degree or graduate degree in a natural resources-related science. Existing Environmental Office staff, DLA/DDC/DDSP personnel, and contracted personnel will be required to implement this plan. SAIA requires that if an installation cannot retain a professional natural resources staff, related Federal or state agencies will be given the opportunity to assume these tasks. Responsibilities of the various organizations at Defense Distribution Center, Susquehanna for the implementation of the INRMP are described in the following subsections.

Successfully implementing an INRMP requires the support of natural resources personnel, other installation staff, command personnel, and installation tenants. In addition, an INRMP Working Group will be developed, composed of key installation personnel from directorates and tenants. Their task will be to review and update issues, goals, and actions annually; prioritize actions; identify and resolve potential conflicts with other installation activities; and identify funding and resources as appropriate. This allows directorates and tenants to be involved in refining and improving actions that relate to their activities.

## 6.2 Project Prescription Development

The most recent policy on INRMP implementation is contained in DOD Memorandum *Implementation of the Sikes Act Improvement Act: Updated Guidance.* According to the memorandum, an INRMP is considered implemented if an installation does any of the following (DOD 2002):

- Actively requests, receives, and uses funds for “must fund” projects and activities
- Ensures that sufficient numbers of professionally trained natural resources management personnel are available to perform the tasks required by the INRMP
- Coordinates annually with all cooperating offices
- Documents specific INRMP action accomplishments undertaken each year.

Key elements of INRMP implementation (e.g., projects) are addressed in **Appendix C**, INRMP Projects, Schedules, and Implementation table. **Appendix C** summarizes the management actions identified in **Sections 5.1** through **5.13** and proposes priorities for their implementation. The taskings proposed for this INRMP are extremely aggressive, and might not be accomplished within the established timelines due to a number of factors (e.g., budget and manpower constraints, wartime taskings). However, their importance to the proper management of Defense Distribution Center, Susquehanna’s natural resources cannot be understated. Therefore, the management actions presented in the table should be modified as part of the annual review of this INRMP to ensure that these taskings are continually emphasized and accomplished when practicable. Additional space has been provided under each resource area heading to allow for the addition of management actions developed during the lifecycle of this INRMP.

## 6.3 Priority Setting and Funding Classification

Project priority within this INRMP is initially determined by funding classification, as defined in DODI 4715.03*, Natural Resources Conservation Program* (DOD 2011). The revised 4715.03 discusses recurring and non-recurring conservation management requirements. **Table 6-1** compares the traditional Class 0, 1, 2, and 3 funding classes with the recurring and non-recurring conservation requirements in DODI 4715.03.

Environmental funding for conservation programs is prioritized as follows:

1. Government Service Natural Resources Manager, Wildlife Biologist, and Cultural Resources Manager. The functions of these staff members are vital to implementing the Natural Resources, Threatened and Endangered Species, and Cultural Resources Programs; Environmental Review; and NEPA compliance.
2. Conservation program funding for natural resources activities will be prioritized as follows:
    a. ESA compliance projects, to include minimization measures and monitoring required by the project description and terms and conditions of a biological opinion.
    b. Endangered species conservation projects to enhance recovery of listed species and to conduct research necessary to understand habitat conditions, habitat use, life history, or other factors better for Federal- and state-listed species.
    c. Natural resources projects to include the following programs: habitat, game management, hunting and fishing, grazing, NEPA, administrative, nongame species, and migratory bird management.

## 6.4 Project Development and Tracking

The INRMP will be evaluated by using the Environmental Performance Assessment System, the Environmental Quality Report, and reviews by the DA, and other interested parties. The INRMP goals and actions can provide a basis for evaluating plan implementation. An annual report will be prepared and could include funds requested and received, future funds requested, a list of projects implemented with a brief summary of results and recommendations for changes, projects not implemented and why, a review of Defense Distribution Center, Susquehanna activities to include a brief summary of training activities, and a description of changes proposed or incorporated into the INRMP.

Projects identified in **Appendix C** will need to be evaluated to ensure that natural resources management prescriptions identified in this INRMP are reviewed by the chain of command, and are documented for inclusion in the annual Environmental Quality Report to Congress (U.S. Army 2002).

## 6.5 Funding

### 6.5.1 Funding Mechanisms

All requirements set forth in this INRMP requiring the expenditure of Defense Distribution Center, Susquehanna funds are expressly subject to the availability of appropriations and the requirements of the Anti-Deficiency Act (31 U.S.C. 1341). No obligation undertaken by Defense

Distribution Center, Susquehanna under the terms of this INRMP shall require, or be interpreted to require, a commitment to expend funds not appropriated by the Congress for a particular purpose. If the installation cannot perform any obligation set forth in this INRMP due to the lack of availability of funds, Defense Distribution Center, Susquehanna intends for the remainder of the agreement to be executed.

**TABLE 6-1. 2011 Recurring and Non-Recurring Conservation Requirements**

| ~~Traditional Funding Class (1996)~~ | Recurring and Non-Recurring Conservation Requirements (2011) |
|---|---|
| ~~**Class 0: Recurring Natural Resources Conservation Management Requirements.** Includes activities needed to cover the recurring administration, personnel, and other costs associated with managing DOD's conservation program that are necessary to meet applicable compliance requirements (Federal and state laws, regulations, Presidential EOs, and DOD policies) or which are in direct support of the military mission.~~ | **1. Recurring Natural Resources Conservation Management Requirements:**<br>a. Administrative, personnel, and other costs associated with managing the DOD Natural Resources Conservation Program that are necessary to meet applicable compliance requirements in Federal and state laws, regulations, EOs, and DOD policies, or in direct support of the military mission.<br>b. DOD components shall give priority to recurring natural resources conservation management requirements associated with the operation of facilities, installations, and deployed weapons systems. These activities include day-to-day costs of sustaining an effective natural resources management program; and annual requirements, including manpower, training, supplies, permits, fees, testing and monitoring, sampling and analysis, reporting and recordkeeping, maintenance of natural resources conservation equipment, and compliance self-assessments. |

| ~~Traditional Funding Class (1996)~~ | Recurring and Non-Recurring Conservation Requirements (2011) |
|---|---|
| ~~**Class I: Current Compliance.** Includes projects and activities needed because an installation is currently out of compliance (has received an enforcement action from a duly authorized Federal or state agency, or local authority); has a signed compliance agreement or has received a consent order; has not met requirements based on applicable Federal or state laws, regulations, standards, Presidential EOs, or DOD policies; or are projects and activities that are immediate and essential to maintain operational integrity or sustain readiness of the military mission. "Class I" also includes projects and activities needed that are not currently out of compliance (deadlines or requirements have been established by applicable laws, regulations, standards, DOD policies, or Presidential EOs, but deadlines have not passed or requirements are not in force) but shall be if projects or activities are not implemented in the current program year.~~ | **2a. Non-Recurring Natural Resources Management Requirements.** Current Compliance. Includes installation projects and activities to support:<br>a. Installations currently out of compliance (e.g., received an enforcement action from an authorized Federal or state agency or local authority).<br>b. Signed compliance agreement or consent order.<br>c. Meeting requirements with applicable Federal or state laws, regulations, standards, EOs, or DOD policies.<br>d. Immediate and essential maintenance of operational integrity or military mission sustainment.<br>e. Projects or activities that will be out of compliance if not implemented in the current program year. Those activities include the following:<br>i. Environmental analyses for natural resources conservation projects, and monitoring and studies required to assess and mitigate potential impacts of the military mission on conservation resources.<br>ii. Planning documentation, master plans, compatible development planning, and INRMPs.<br>iii. Natural resources planning-level surveys.<br>iv. Reasonable and prudent measures included in incidental take statements of biological opinions, biological assessments, surveys, monitoring, reporting of assessment results, or habitat protection for listed, at-risk, and candidate species so that proposed or continuing actions can be modified in consultation with the USFWS or National Oceanic and Atmospheric Administration Fisheries Service.<br>v. Mitigation to meet existing regulatory permit conditions or written agreements.<br>vi. Nonpoint source pollution or watershed management studies or actions needed to meet compliance dates cited in approved state coastal nonpoint source pollution control plans, as required to meet consistency determinations consistent with Coastal Zone Management.<br>vii. Wetlands delineation critical for the prevention of adverse impacts on wetlands, so that continuing actions can be modified to ensure mission continuity.<br>viii. Compliance with missed deadlines established in DOD executed agreements. |

| ~~Traditional Funding Class (1996)~~ | Recurring and Non-Recurring Conservation Requirements (2011) |
|---|---|
| ~~**Class II: Maintenance Requirements.** Includes those projects and activities needed that are not currently out of compliance (deadlines or requirements have been established by applicable laws, regulations, standards, Presidential EOs, or DOD policies) but deadlines have not passed or requirements are not in force, 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.~~ | **2b. Non-Recurring Natural Resources Management Requirements.** Maintenance Requirements. Includes those projects and activities needed to meet an established deadline beyond the current program year and maintain compliance. Examples include the following:<br>a. Compliance with future deadlines.<br>b. Conservation, GIS mapping, and data management to comply with Federal, state, and local regulations, EOs, and DOD policy.<br>c. Efforts undertaken in accordance with non-deadline specific compliance requirements of leadership initiatives.<br>d. Wetlands enhancement to minimize wetlands loss and enhance existing degraded wetlands.<br>e. Conservation recommendations in biological opinions issued pursuant to the ESA. |
| ~~**Class III: Enhancement Actions, Beyond Compliance.** Includes those projects and activities that enhance conservation resources or the integrity 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.~~ | **2c. Non-Recurring Natural Resources Management Requirements. Enhancement Actions Beyond Compliance.** Includes those projects and activities that enhance conservation resources or the integrity of the installation mission, or are needed to address overall environmental goals and objectives, but are not specifically required by law, regulation, or EO, and are not of an immediate nature. Examples include the following:<br>a. Community outreach activities, such as International Migratory Bird Day, Earth Day, National Public Lands Day, Pollinator Week, and Arbor Day activities.<br>b. Educational and public awareness projects, such as interpretive displays, oral histories, Watchable Wildlife areas, nature trails, wildlife checklists, and conservation teaching materials.<br>c. Restoration or enhancement of natural resources when no specific compliance requirement dictates a course or timing of action.<br>d. Management and execution of volunteer and partnership programs. |

DOD cannot commit funding before Congress makes it available (DOD 2011). In order to program for future expected expenses, DOD employs the Planning, Programming, Budget and Execution System (PPBES) budget process. The PPBES is an ongoing process and is continuously reviewed and refined. Environmental budget requirements are identified by the installation staff, submitted to its Major Command, and then included in the Program Objectives Memorandum (POM), which is modified and forwarded to the Chief of Staff, to the Secretary of the Army, the Secretary of Defense, and to the President.

The Office of Management and Budget considers funding for the preparation and implementation of this INRMP, as required by the Sikes Act, and the associated NEPA analysis and documentation 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. As such, these programs and projects have been placed into three priority-based categories: (1) high-priority projects, important

projects, and (3) projects of lesser importance. The prioritization of the projects is based on need, and need is based on a project's importance in moving the natural resources management program closer towards successfully achieving its goal. The PPBES is summarized as follows (DOD 2005):

- The PPBES process consists of long-range planning to anticipate and secure funding requirements to meet security threats and accomplish program goals.
- These requirements are estimated and programmed for the next six years (the subsequent fiscal year and five years out) in the Future Year Defense Plan (FYDP). The FYDP is a list of resource requirements for the next six years. Specifically, the FYDP comprises the subsequent fiscal year budget and funding requirements projected out five years.
- The FYDP resources are then analyzed via the Programming Process. In the Programming Process, program managers reassess their requirements, reprioritize planned activity, reevaluate existing funding guidance, and estimate their funding needs for the next budget year, plus the subsequent five fiscal years (referred to as POMs 1–5).
- The POM process takes place within Defense Components beginning in the fall of each year. Then each DOD component submits the POM in the spring to the Office of the Secretary of Defense. The Office reviews the budget submissions and develops the President's budget that will be submitted to Congress. At the installation level, data submissions to support this are made to the Major Commands twice annually, in fall and spring.
- Based on POM decisions of each component, budget controls are issued to the field commands for budget preparation.

The time scale of an INRMP fits well into the DOD PPBES forecasting process. One full cycle of the DOD budget process includes the next budgeted fiscal year and projections for the following five fiscal years. One full cycle of the INRMP, with upper command reapproval, covers a five-year period. This means that by relying on an INRMP that is updated regularly, installations should be able to project relatively accurate funding requirements for natural resources management for five-year periods, at a minimum (DOD 2005).

### 6.5.2 Funding Sources

Once a project has been identified, a funding source needs to be determined. The following sources of funding are available to Defense Distribution Center, Susquehanna.

1. **Legacy Funds.** The Legacy Resource Management Program (Legacy Program) is a special Congressionally mandated initiative to fund military conservation projects. The Legacy Program can provide funding for a variety of conservation projects, such as regional ecosystem management initiatives, habitat preservation efforts, archaeological investigations, invasive species control, monitoring and predicting migratory patterns of birds and animals, and national partnerships and initiatives, such as National Public Lands Day.
2. **Fish and Wildlife Fees.** User fees collected for the privilege of hunting, fishing, or trapping will be collected, deposited and used in accordance with the SAIA (10 U.S.C.

2671) and the DOD financial management regulations. The Sikes Act specifies that user fees collected for hunting, fishing or trapping shall be used only on the installation where collected. Further, collections will be used exclusively for fish and wildlife conservation and management on the installation where collected.

3. **Strategic Environmental Research and Development Program (SERDP) Funds.** SERDP is DOD's corporate environmental Research and Development program, planned and executed in full partnership with the Department of Energy (DOE) and USEPA, with participation by numerous other Federal and non-Federal organizations. SERDP funds for environmental and conservation are allocated through a competitive process. The SERDP focuses on Cleanup, Compliance, Conservation, and Pollution Prevention technologies. The purpose of the conservation technology program is to use research and development to provide improved inventory and monitoring capabilities, develop more effective impact and risk assessment techniques, and provide improved mitigation and rehabilitation capabilities. Recently, the program solicited Statements of Need for conservation technology proposals to research indicators of stress on threatened and endangered species and to develop techniques to inventory and monitor threatened and endangered species in accessible areas.
4. **Non-DOD Funds.** Many grant programs are available for natural resources management projects, such as watershed management and restoration, habitat restoration, and wetland and riparian area restoration. When federally funded, these programs typically require non-Federal matching funds. However, installations may partner with other groups to propose eligible projects. Following are examples of grant programs:
    a. The Five-Star Restoration Challenge Grants Program, sponsored by both Federal and nonprofit organizations, provides modest financial assistance in support of community-based wetland and riparian restoration projects. One of the goals of the program is to build partnerships between Federal, state, local, and nonprofit organizations, and to foster local natural resources stewardship.
    b. National Public Lands Day Grants. Installations are eligible to receive DOD Legacy funds in support of National Public Lands Day. Projects eligible for funds include habitat restoration, wetland restoration, and stream cleanup.

Nontraditional sources of funding for natural resources programs include non-appropriated reimbursable funds (i.e., agricultural or grazing outleasing, forestry, hunting and fishing fees), and appropriated reimbursable funds (e.g., DOD Legacy Program, U.S. Department of Agriculture Pest Management Program). These accounts are sources of funds for Class 3 projects. Installations, however, should not depend on these programs to fully fund their natural resources management programs.

## 6.6 Annual Update and Review

DA guidance directs installations to coordinate their annual program evaluation with the appropriate field-level offices of the USFWS and the state fish and wildlife agencies, to enable partners to measure both the successes and issues resulting from INRMP implementation (U.S. Army 2007). Results of the evaluation are used by the Defense Distribution Center, Susquehanna environmental personnel to determine the effectiveness of the installation natural resources

management program, to facilitate annual coordination with USFWS and the state fish and wildlife agency, and to provide data for the Army portion of the DOD annual report to Congress (U.S. Army 2007).

DOD Annual Review: In accordance with DOD Instruction 4715.03, the DOD Components review INRMPs annually in cooperation with the other internal and external parties to the INRMP. DOD annually reviews the INRMP goals and objectives, establishes a realistic schedule for undertaking proposed actions, determines adjustments needed to keep INRMPs current, and generates annual assessments of the Natural Resource Conservation Metrics.

INRMP Update: Any change to an INRMP that, if implemented, is not expected to result in consequences materially different from those in the existing INRMP and analyzed in an existing NEPA document. Such changes will not result in a significant environmental impact, and installations are not required to invite the public to review or to comment on the decision to continue implementing the updated INRMP.

INRMP Revision: Any change to an INRMP that, if implemented, may result in a significant environmental impact, including those not anticipated by the parties to the INRMP when the plan was last approved and/or reviewed as to operation and effect. All such revisions require approval by all parties to the INRMP, and will require a new or supplemental NEPA analysis.

# 7 List of Preparers

The 2016 INRMP Update was prepared by HDR, Inc., under the direction of Defense Distribution Center, Susquehanna. The following individuals contributed to the preparation of this document:

**Megan Gambone**
M.S. Biology
B.S. Environmental Science
Years of Experience: 10

The 2020 INRMP review was prepared by HDR, Inc., under the direction of Defense Distribution Center, Susquehanna and Headquarters, DLA in order to meet wetland mitigation permit stipulations. See **Section 6.6** for definitions of INRMP reviews, updates and revisions. The following individuals contributed to the preparation of this document:

**Kate Crosthwaite**
M.S. Botany
B.S. Biology
Years of Experience: 22

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# APPENDIX A. ACRONYMS

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# APPENDIX A ACRONYMS

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|---|---|
| °F | degrees Fahrenheit |
| ACP | Access Control Point |
| AR | Army Regulation |
| BASH | Bird/Wildlife Aircraft Strike Hazard |
| BGEPA | Bald and Golden Eagle Protection Act |
| BMP | Best Management Practice |
| BRAC | Base Realignment and Closure |
| CBPRP | Installation Chesapeake Bay Pollutant Reduction Plan |
| CCWA | Chesapeake Clean Water Act |
| CENAB | Corps of Engineers, Baltimore District |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| CWA | Clean Water Act |
| DA | Department of the Army |
| DDC | Defense Distribution Center |
| DDRE | Defense Distribution Region-East |
| DDRW | Defense Distribution Region-West |
| DDSP | Defense Distribution Depot Susquehanna, Pennsylvania |
| DLA | Defense Logistics Agency |
| DOD | Department of Defense |
| DODI | Department of Defense Instruction |
| EA | Environmental Assessment |
| EDC | Eastern Distribution Center |
| EO | Executive Order |
| ESA | Endangered Species Act |
| FYDP | Future Year Defense Plan |
| GPW | General Purpose Warehouse |
| ICP | Integrated Contingency Plan |
| INRMP | Integrated Natural Resources Management Plan |
| IPM | Integrated Pest Management |
| IPMP | Integrated Pest Management Plan |

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| LEED | Leadership in Energy and Environmental Design |
| MBTA | Migratory Bird Treaty Act |
| MOU | Memorandum of Understanding |
| MS4 | Municipal Separate Storm Sewer Systems |
| MSL | mean sea level |
| NEPA | National Environmental Policy Act |
| NPDES | National Pollutant Discharge |
| ODEP | Office of the Director Environmental Programs |
| PADCNR | Pennsylvania Department of Conservation and Natural Resources |
| PADEP | Pennsylvania Department of Environmental Protection |
| PAFBC | Pennsylvania Fish and Boat Commission |
| PAGC | Pennsylvania Game Commission |
| PASPGP | Pennsylvania Statewide Programmatic General Permit |
| PEM | palustrine emergent |
| PNDI | Pennsylvania Natural Heritage Program Diversity Inventory |
| POM | Program Objectives Memorandum |
| PPA | Plant Protection Act |
| PPBES | Planning, Programming, Budget and Execution System |
| SAIA | Sikes Act and Improvement Act |
| SERDP | Strategic Environmental Research and Development Program |
| SWPPP | Stormwater Pollution Prevention Plan |
| TMDL | Total Maximum Daily Load |
| U.S.C. | United States Code |
| USACE | U.S. Army Corps of Engineers |
| USAEC | U.S. Army Environmental Command |
| USEPA | U.S. Environmental Protection Agency |
| USFWS | U.S. Fish and Wildlife Service |

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# APPENDIX C INRMP PROJECTS, SCHEDULES, AND IMPLEMENTATION TABLE

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# APPENDIX C DEFENSE DISTRIBUTION CENTER, SUSQUEHANNA INMRP PROJECTS, SCHEDULES, AND IMPLEMENTATION TABLE

**Table C-1** contains natural resources projects proposed for Defense Distribution Center, Susquehanna and includes the INRMP subject area, a specific INRMP issue number, a project description, the corresponding law or regulation, DOD Class, and proposed fiscal year(s) for implementing each recommendation.

The cells highlighted in yellow represent edited or new content from the 2016 INRMP which were undertaken during the 2020 INRMP update. The updated content is required by wetland permits related to the BRAC DPW, ACP-4, and MS4 wetland mitigation and rehabilitation projects. Text with double strike-through documents deleted text. The INRMP Revision scheduled for 2021 will include revisions to the content not related to the wetland permits which was the sole focus for the 2020 content additions.

The projects presented in **Table C-1** strive to enhance natural resources on Defense Distribution Center, Susquehanna, without impacting other installation plans and activities. Achieving these recommendations will require development to be conducted in an environmentally sensitive way (i.e., smart growth) and requires cooperation between the installation garrison, environmental offices, facilities and maintenance, and operations. Any future changes in mission, training activity, or technology should be analyzed to assess their impact on natural resources. As new installation plans and DLA guidance and regulations are developed, they should be integrated with the drivers and management actions resulting from this INRMP.

**TABLE C-1 Defense Distribution Center, Susquehanna INRMP Projects and Implementation Table.**

| INRMP Subject Area | Responsible Party | INRMP Issue Number | Project Description | Federal, State, DOD or DA Law, Policy or Guidance[1] | DOD Class[2] | Fiscal Year |
|---|---|---|---|---|---|---|
| Ecosystem Management | | ECO-2 | Provide training to Defense Distribution Center, Susquehanna staff on goals, and objectives contained within this INRMP and their role in INRMP implementation. | SAIA, DoD Inst. 4715.03, AR 200-1 | 2c | ~~2013 2017;~~ 2020-2025 |
| Ecosystem Management | | ECO-2 | Use the GIS to store, manage, analyze, interpret, and report data in a scientifically valid, efficient, and cost- effective manner to enhance implementation of this INRMP. | SAIA, DoD Inst. 4715.03, AR 200-1 | 2c | ~~2013 2017;~~ 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-1 | Conduct floristic and fauna surveys at established intervals (every three to five years) to determine any changes to the state of federally-listed plants/animals located on Defense Distribution Center, Susquehanna. If a candidate, threatened or endangered species is discovered, management actions will be developed and incorporated into this INRMP to fulfill the requirements of the ESA (*i.e.,* to provide adequate management or protection). | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2b | ~~2013 and 2017;~~ 2022 |
| Threatened, Endangered, and Species of Concern | | TES-2 | Survey for sensitive species and identify tasks to protect these species when appropriate, subject to availability of funding. If the plant or animal species of concern are present on Defense Distribution Center, Susquehanna, develop a program to avoid these species during military activities on the installation whenever possible. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2b | ~~2013 2017;~~ 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-3 | Continue monitoring listed species as described in this INRMP and adapt monitoring and management actions as needed. Use monitoring information and other information gleaned to guide adaptive management. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2c | 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-3 | Initiate projects to improve habitats for listed species as funding is available and when such projects will not adversely affect the military mission (e.g., limited prescribed burns to control blight, noxious weeds, or invasive annual grasses; limited habitat disturbance where such disturbance will promote native plant growth; preventing habitat disturbance when this will promote native plant growth; and revegetation with native plants). | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2c | ~~2013 2017;~~ 2020-2025 |

| INRMP Subject Area | Responsible Party | INRMP Issue Number | Project Description | Federal, State, DoD or DA Law, Policy or Guidance[1] | DoD Class[2] | Fiscal Year |
|---|---|---|---|---|---|---|
| Threatened, Endangered, and Species of Concern | | TES-3 | Periodically review the natural resources management program to ensure that management actions do not adversely impact species of concern habitat. Ensure that Project-specific measures set forth through coordination with local, state, and Federal agencies are implemented and reflected in annual updates of this INRMP. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2c | 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-4 | Implement species-specific and overall conservation and monitoring measures described in this INRMP and those developed in future biological opinions. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2c | 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-4 | Develop special status species identification sheets for distribution to ~~training~~ maintenance crews, operations, and visiting personnel. Provide information on how to avoid impacting these species while conducting training. Provide an environmental coordination map, which includes the following information: 1) regulated areas in which activity restrictions are in place; and 2) special status species locations where pre-planning efforts might be necessary. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2c | 2022 |
| Threatened, Endangered, and Species of Concern | | TES-4 | Continue use of the established Environmental Review process to identify actions that result in adverse effects on special status species or habitats. Coordinate measures with the proponent to reduce adverse effects. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2c | 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-4 | Continue to implement land-use regulations developed by Defense Distribution Center, Susquehanna. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2c | 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-4 | Periodically review the natural resources management program to ensure that management actions do not impact special status species adversely. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2c | 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-4 | Ensure that construction personnel are made aware of Project-specific stipulations that are required by Federal and state permits and authorizations to minimize impacts to sensitive species and habitats. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2c | 2020-2025 |

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| Threatened, Endangered, and Species of Concern | | TES-5 | Minimize impacts on foraging and roosting bats by implementing the measures outlined in the USFWS *Guidance on Developing and Implementing an Indiana Bat Conservation Plan* (revised February 2013) | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 – 2017;~~ 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-5 | Retain at least a 50-foot forested buffer (but preferably a 100-150-foot buffer) on each side of streams and around wetlands. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 – 2017;~~ 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-5 | Co-locate project features (e.g., roads and utility lines) and cluster project features (e.g., houses) to reduce forest clearing. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 – 2017;~~ 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-5 | Seasonal restriction on tree cutting: Only cut trees when northern long-eared bats are hibernating or concentrated near their hibernacula. For project areas affecting northern long-eared bat swarming habitat (near hibernacula), only cut trees between November 15 and March 31. For project areas affecting summer habitat, only cut trees between October 15 and March 31. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 – 2017;~~ 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-5 | Phase tree clearing over multiple years, if applicable to the project. Indicate the rate at which forest will be cleared, as well as the total duration of this effect (e.g., 5 acres/year for 10 years). | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 – 2017;~~ 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-5 | Reforest temporarily cleared areas with tree species preferred by northern long-eared bats. Ensure soils are segregated during earth disturbance activities and ensure soils are not compacted, to allow for successful tree establishment. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 – 2017;~~ 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-5 | Avoid use of invasive, exotic plant species when re-foresting and when stabilizing soils. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 – 2017;~~ 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-5 | Develop and implement stringent erosion and sedimentation controls to protect water quality and the northern long-eared bat prey base in streams and wetlands. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 – 2017;~~ 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-5 | For forest habitat loss resulting from the project that will not be addressed through reforestation under measure #6, provide for the short and long-term habitat needs of the northern long-eared bat by offsetting the effects of this loss. This can be done through the conservation of existing, currently unprotected forest habitat or use of an in-lieu fee program that conserves forest habitat for northern long-eared bats. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 – 2017;~~ 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-6 | Actively manage forested habitat for the federally threatened northern long-eared bat and the endangered Indiana bat by releasing roost trees and controlling invasive species in potential habitat. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 – 2017;~~ 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-6 | Implement the USFWS Forest Management Guidelines for northern long-eared bat summer habitat and swarming habitat. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 – 2017;~~ 2020-2025 |

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| Threatened, Endangered, and Species of Concern | | TES-7 | For any project proposed within 300 feet of the Marsh Run wetland complex, consultation with USFWS should be conducted to determine whether a Phase II bog turtle survey ~~should be conducted~~ is required. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 - 2017;~~ 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-7 | If bog turtles or their habitat ~~are~~ found, a monitoring plan and additional management objectives will be added to the INRMP. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 - 2017;~~ 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-7 | Implement avoidance/minimization/construction management measures for Sites 2 and 3 on the MS4 Wetland Restoration Project required by Federal and state Project permits and authorizations to minimize the potential to kill or harm the bog turtle (see Appendix G.3, correspondence dated September 30, 2019). | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 - 2017;~~ 2020-2025 |
| Threatened, Endangered, and Species of Concern | | TES-7 | Ensure a comprehensive summary report of the MS4 Project (Sites 2 and 3) bog turtle construction monitoring is completed by a recognized-qualified bog turtle surveyor and submitted to USFWS within 60 days of Project completion. | SAIA, ESA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 - 2017;~~ 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-1 | Monitor and manage the BRAC GPW compensatory wetland mitigation site in compliance with the permit requirements. See permit and approved wetland mitigation plan, including monitoring and management, in Appendix G.1. | SAIA, CWA, DoD Inst. 4715.03, AR 200-1 | 2a | 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-1 | Integrate the management goals for the BRAC GPW mitigation project with existing natural resources management programs at Defense Distribution Center, Susquehanna, including the IPMP. | SAIA, CWA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 - 2017;~~ 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-1 | Ensure that any changes in statute, regulation, or agency needs or mission will not result in an incompatible use resulting in any loss in function of compensatory mitigation wetlands. | SAIA, CWA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 - 2017;~~ 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-1 | Implement the BRAC GPW Remedial Action Plan to include monitoring reports and adaptive management until Special Conditions 1 and 5 of the Permit are achieved. | SAIA, CWA, DoD Inst. 4715.03, AR 200-1 | 2a | 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-1 | Conduct long-term management through inspections and repair of damage on compensatory wetland mitigation wetlands associated with the BRAC GPW project. | SAIA, CWA, DoD Inst. 4715.03, AR 200-1 | 2a | 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-2 | Maintain and update wetland inventory data, including wetland distribution and categories. | SAIA, CWA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013~~ 2025 |
| Wetlands and Waters of the U.S. | | WT-2 | Monitor impacts on wetlands from training maintenance, operations, and visitor activities. | SAIA, CWA, DoD Inst. 4715.03, AR 200-1 | 2a | 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-2 | Conduct Environmental Review for activities that could affect wetlands. | SAIA, CWA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 - 2017;~~ 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-2 | Plan development and ~~training~~ maintenance activities to avoid wetland impacts to the maximum extent possible and mitigate unavoidable impacts on wetland functions. | SAIA, CWA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013 - 2017;~~ 2020-2025 |

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| Wetlands and Waters of the U.S. | | WT-2 | Maintain water quality to protect surface waters and wetlands from excessive sediment-laden runoff. | SAIA, CWA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013-2017;~~ 2020-2025 |
| ~~Wetlands and Waters of the U.S.~~ | | ~~WT-2~~ | ~~Incorporate wetlands conservation education into the Sustainable Range Awareness program.~~ | ~~SAIA, CWA, DoD Inst. 4715.03, AR 200-1~~ | ~~2a~~ | ~~2013-2017~~ |
| ~~Wetlands and Waters of the U.S.~~ | | ~~WT-2~~ | ~~Monitor impacts on wetlands from training activities.~~ | ~~SAIA, CWA, DoD Inst. 4715.03, AR 200-1~~ | ~~2a~~ | ~~2013-2017~~ |
| ~~Wetlands and Waters of the U.S.~~ | | ~~WT-2~~ | ~~Incorporate BMPs into necessary military operations in and around wetlands.~~ | ~~SAIA, CWA, DoD Inst. 4715.03, AR 200-1~~ | ~~2a~~ | ~~2013-2017~~ |
| Wetlands and Waters of the U.S. | | WT-2 | Maintain a “no mow” zone around the pond | SAIA, CWA, DoD Inst. 4715.03, AR 200-1 | 2b | ~~2013-2017;~~ 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-2 | Maintain and/or plant native trees, shrubs, and herbaceous plants. | SAIA, CWA, DoD Inst. 4715.03, AR 200-1 | 2b | ~~2013-2017;~~ 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-2 | Leave existing logs and other woody debris in and around the water as basking areas for turtles and refugia for salamanders, snakes, and small mammals. | SAIA, CWA, DoD Inst. 4715.03, AR 200-1 | 2b | ~~2013-2017;~~ 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-2 | Control cattails if they begin to dominate more than 50 percent of the wetland. | SAIA, CWA, DoD Inst. 4715.03, AR 200-1 | 2b | ~~2013-2017;~~ 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-3 | Monitor and manage the ACP-4 compensatory wetland mitigation sites in compliance with the permit requirements. See permit and approved wetland mitigation plans, including monitoring and management, in Appendix G.2. | SAIA, CWA, DoD Inst. 4715.03, AR 200-2 | 2a | 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-3 | Integrate the management goals for the ACP-4 Project with existing natural resources management programs at Defense Distribution Center, Susquehanna, including the IPMP. | SAIA, CWA, DoD Inst. 4715.03, AR 200-2 | 2a | 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-3 | Ensure that any changes in statute, regulation, or agency needs or mission will not result in an incompatible use resulting in any loss in function of the ACP-4 compensatory mitigation wetland. | SAIA, CWA, DoD Inst. 4715.03, AR 200-2 | 2a | 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-3 | Inspect and monitor the ACP-4 mitigation site for a minimum of five years (full growing seasons) following initial construction of the project. | SAIA, CWA, DoD Inst. 4715.03, AR 200-2 | 2a | 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-3 | Prepare annual monitoring reports for submittal to CENAB by 31 December of each year. | SAIA, CWA, DoD Inst. 4715.03, AR 200-2 | 2a | 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-3 | Identify remedial measures as needed and include the measures for review and approval by CENAB in the annual monitoring reports. | SAIA, CWA, DoD Inst. 4715.03, AR 200-2 | 2a | 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-3 | Provide long-term management for the ACP-4 Project through inspections and repair of damage. | SAIA, CWA, DoD Inst. 4715.03, AR 200-2 | 2a | 2020-2025 |

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| Wetlands and Waters of the U.S. | | WT-3 | Ensure that any changes in statute, regulation, or agency needs or mission will not result in an incompatible use resulting in any loss in function of the ACP-4 compensatory mitigation wetland. | SAIA, CWA, DoD Inst. 4715.03, AR 200-2 | 2a | 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-4 | Monitor and manage the MS4 wetland restoration sites in compliance with the Federal and state permit and authorization requirements. See permit and approved wetland restoration plans, including monitoring and management, in Appendix G.3. | SAIA, CWA, DoD Inst. 4715.03, AR 200-2 | 2a | 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-4 | Integrate the management goals for the MS4 restoration project with existing natural resources management programs at Defense Distribution Center, Susquehanna, including the IPMP. | SAIA, CWA, DoD Inst. 4715.03, AR 200-2 | 2a | 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-4 | Ensure that any changes in statute, regulation, or agency needs or mission will not result in an incompatible use resulting in any loss in function of the restored MS4 wetland. | SAIA, CWA, DoD Inst. 4715.03, AR 200-2 | 2a | 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-4 | Inspect and monitor the MS4 mitigation site for a minimum of five years (full growing seasons) following initial construction of the project. | SAIA, CWA, DoD Inst. 4715.03, AR 200-2 | 2a | 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-4 | Prepare annual MS4 monitoring reports for submittal to CENAB by 31 December of each year. | SAIA, CWA, DoD Inst. 4715.03, AR 200-2 | 2a | 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-4 | Identify remedial measures as needed and include the measures for review and approval by CENAB in the MS4 annual monitoring reports. | SAIA, CWA, DoD Inst. 4715.03, AR 200-2 | 2a | 2020-2025 |
| Wetlands and Waters of the U.S. | | WT-4 | Provide long-term management for the MS4 mitigation project through inspections and repair of damage. | SAIA, CWA, DoD Inst. 4715.03, AR 200-2 | 2a | 2020-2025 |
| Watershed Management | | WM-1 | Implement provisions of the SWPPP to include BMPs, monitoring, reporting, and modifying BMPs as needed and as required by project-specific permits and authorizations. | SAIA, CWA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013;~~ 2020-2025 |
| Watershed Management | | WM-1 | Monitor groundwater to include drinking water, monitoring for suspected pollution sources, and monitoring at known plumes. | SAIA, CWA, SDWA, DoD Inst. 4715.03, AR 200-1 | 2c | ~~2013;~~ 2020-2025 |
| Watershed Management | | WM-1 | Maintain and implement the Integrated Contingency Plan. | SAIA, CWA, SDWA, DoD Inst. 4715.03, AR 200-1 | 2a | 2020-2025 |
| Watershed Management | | WM-1 | Maintain and implement the CBPRP. | SAIA, CWA, SDWA, DoD Inst. 4715.03, AR 200-1 | 2a | 2020-2025 |
| Watershed Management | | WM-1 | Implement the MS4 Project Erosion and Sediment Control Plan or equivalent. | SAIA, CWA, SDWA, DoD Inst. 4715.03, AR 200-1 | 2a | 2020-2025 |
| Fish and Wildlife Management | | FW-1 | Conduct biotic surveys every ten years to monitor significant changes in wildlife species or populations present on Defense Distribution Center, Susquehanna. | SAIA, DoD Inst. 4715.03, AR 200-1 | 2c | ~~2015~~; 2025 |

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| Fish and Wildlife Management | | FW-1 | Ensure that the natural resources staff members responsible for wildlife management and conservation obtain focused training regarding management of these resources as related to conservation on a military installation on an annual basis. | SAIA, DoD Inst. 4715.03, AR 200-1 | 2c | ~~2013-2017;~~ 2020-2025 |
| Fish and Wildlife Management | | FW-1 | Monitor species and/or communities that are components of prey habitat and/or indicators of ecosystem integrity, status of sensitive species, and maintaining the capability of Defense Distribution Center, Susquehanna to support military missions. | SAIA, DoD Inst. 4715.03, AR 200-1 | 2c | ~~2013-2017;~~ 2020-2025 |
| Fish and Wildlife Management | | FW-2 | Conduct surveys of activity sites as needed to determine if migratory bird nests are present and active. If take is unavoidable and would require an MBTA permit, Defense Distribution Center, Susquehanna will apply for an appropriate permit for intentional take of migratory birds. | SAIA, MBTA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013-2017;~~ 2020-2025 |
| Fish and Wildlife Management | | FW-2 | Work with project proponents and Defense Distribution Center, Susquehanna directorates to develop effective management for minimizing the unintentional take of migratory birds. | SAIA, MBTA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013-2017;~~ 2020-2025 |
| Fish and Wildlife Management | | FW-2 | Identify bird/wildlife-aircraft strike hazards to the adjacent airfield. | SAIA, MBTA, DoD Inst. 4715.03, AR 200-1 | 2b | ~~2013-2017;~~ 2020-2025 |
| Habitat Management | | HM-1 | Survey areas on post where soil erosion and compaction might occur to ensure that BMPs within the erosion and sedimentation plan are implemented and effective. | SAIA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013-2017;~~ 2020-2025 |
| ~~Habitat Management~~ | | ~~HM-1~~ | ~~Implement recommendations from erosion survey. See~~d with predominantly native seed mixtures or restore as needed. | ~~SAIA, DoD Inst. 4715.03, AR 200-1~~ | ~~2a~~ | ~~2013~~ |
| ~~Habitat Management~~ | | ~~HM-2~~ | ~~Temporarily identify the desired trees and all of the trees that are going to be removed (ones that are in direct competition with the desired trees).~~ | ~~SAIA, DoD Inst. 4715.03, AR 200-1~~ | ~~2a~~ | ~~2013~~ |
| ~~Habitat Management~~ | | ~~HM-2~~ | ~~Daylight desired trees (oak, cherry and hickory).~~ | ~~SAIA, DoD Inst. 4715.03, AR 200-1~~ | ~~2a~~ | ~~2013~~ |
| Exotic and Invasive Species Management | | INV-1 | Establish BMPs such as seed testing with the *Rules for Testing Seed*, published by the Association of Official Seed Analysts during landscaping projects to prevent new species from becoming established on the Defense Distribution Center, Susquehanna. | SAIA, EO 13112, DoD Inst. 4715.03, AR 200-1 | 2c | ~~2013-2017;~~ 2020-2025 |
| Exotic and Invasive Species Management | | INV-1 | Include language in contracts to minimize the introduction or spread of invasive plant species on the installation. The PADCNR provides suggestions for specific contract language to be incorporated into new construction as well as landscape maintenance as well as more information on weed prevention plans. | SAIA, EO 13112, DoD Inst. 4715.03, AR 200-1 | 2b | ~~2013-2017;~~ 2020-2025 |
| Exotic and Invasive Species Management | | INV-2 | Implement site-specific management of non-native and invasive plant species related to the BRAC GPW, ACP-4 and MS4 Project sites. | SAIA, EO 13112, DoD Inst. 4715.03, AR 200-1 | 2a | 2020-2025 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Exotic and Invasive Species Management | | INV-2 | Monitor for the efficacy of control techniques of invasive plants at wetland compensatory wetland mitigation sites and apply adaptive management when appropriate. | SAIA, EO 13112, DoD Inst. 4715.03, AR 200-1 | 2a | 2020-2025 |
| Exotic and Invasive Species Management | | INV-2 | Monitor for the spread of existing invasive plant populations as well as establishment of new infestations or species long-term at the mitigation sites. | SAIA, EO 13112, DoD Inst. 4715.03, AR 200-1 | 2a | 2020-2025 |
| Grounds Maintenance | | GM-1 | Implement pest management controls as approved in the IPMP.~~and other pest related guidance and plans.~~ | SAIA, EO 13112, DoD Inst. 4715.03, DoD Inst. 4150.7, AR 200-1 | 2a | ~~2013-2017;~~2020-2025 |
| Grounds Maintenance | | GM-2 | Coordinate with state and local regulators to obtain appropriate permits for nonnative and invasive plant species eradication in wetland areas. | SAIA, EO 13112, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013-2017;~~2020-2025 |
| Natural Resources Law Enforcement | | LE-1 | Installation personnel should attend the NMFWA annual training for experienced wardens and provide information obtained to range personnel, York County Sheriff and other enforcement personnel. | SAIA, DoD Inst. 4715.03, AR 200-1 | 2c | ~~2013-2017;~~2020-2025 |
| Natural Resources Law Enforcement | | LE-1 | Cooperate with other agencies, particularly the USFWS, PGC, PAFBC and PADCNR, to ensure that natural resources laws are adequately enforced. | SAIA, DoD Inst. 4715.03, AR 200-1 | 2a | ~~2013-2017;~~2020-2025 |
| ~~Outdoor Recreation~~ | | ~~OR-1~~ | ~~Create a public access protocol.~~ | ~~SAIA, DoD Inst. 4715.03, AR 200-1~~ | ~~2c~~ | ~~2014~~ |
| ~~Environmental Awareness, Education and Outreach~~ | | ~~EDU-2~~ | ~~Establish a watchable wildlife program.~~ | ~~SAIA, DoD Inst. 4715.03, AR 200-1~~ | ~~2c~~ | ~~2014~~ |
| Environmental Awareness, Education and Outreach | | EDU-2 | Educate the local community, installation personnel, and tenants about the natural resources program. | SAIA, DoD Inst. 4715.03, AR 200-1 | 2c | ~~2013-2017;~~2020-2025 |
| Environmental Awareness, Education and Outreach | | EDU-2 | Periodically review and update outreach and education materials to ensure that each is still current. | SAIA, DoD Inst. 4715.03, AR 200-1 | 2c | ~~2013-2017;~~2020-2025 |

*Note:*

*1. This is not a comprehensive list of applicable regulation; other regulations, policy, or guidance may apply. See* ***Appendix B*** *for a comprehensive list of laws, policies or guidance for management of natural resources.*

*2. See* ***Table 6-1*** *for a description of DOD funding classes.*

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# APPENDIX G. INFORMATION SUPPORTING THE OPERATIONAL COMPONENT PLAN FOR WETLANDS MANAGEMENT

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## Appendix G.1
## Hyperlinked BRAC GPW Compensatory Wetland Mitigation Project and Remediation Correspondence

2008-02-03. CENAB BRAC GPW Letter Review Area Preliminary Jurisdictional Determination Letter, dated February 8, 2008

2008-11-13. CENAB BRAC GPW Letter of Authorization under PASPGP-3 and Special Conditions, dated November 13, 2008

2009-08-03. CENAB Letter for Basewide Prelim JD, dated August 3, 2009

2010-09. BRAC GPW Monitoring Report, dated September 2010

2011-07. BRAC GPW Monitoring Report, dated July 2011

2014-04-23. CENAB BRAC GPW Letter of Noncompliance for Special Conditions 1 and 5, dated April 23, 2014

2015-01-08. CENAB BRAC GPW Letter of Acceptance for the Remedial Action Plan, dated January 8, 2015

2017-03-20. DDSP Letter to Submit Revised Remedial Action Plan, dated March 20, 2017

2017-04-17. CENAB Letter of Acceptance of Remedial Action Plan, dated April 17, 2017

2017-04-27. YCCD Letter of Acceptance of Remedial Action Plan, dated April 27, 2017

2018-08-02. PADEP BRAC and ACP 4 Compliance Review Letter, dated August 2, 2018

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## Appendix G.2
## Hyperlinked ACP-4 Wetland Mitigation Project Correspondence

2014-04-29. CENAB ACP-4 Letter Review Area Preliminary Jurisdictional Determination Letter, dated April 29, 2014

2014-05-15. ACP-4 Mitigation Plan, dated May 15, 2014

2015-01-08. CENAB ACP-4 Letter Mitigation Plan Acceptance and Authorization under PASPGP-4, dated January 8, 2015

2015-02-10. DDSP ACP-4 Letter PADEP Revised Permit Application Submittal, dated February 10, 2015

2015-04-06. CENAB ACP-4 Permit Modification Acceptance Letter, dated April 6, 2015

2015-06-17. PADEP ACP-4 Approved Permit E67-913, dated June 17, 2015

2018-08-09. ACP-4 4A SS-12_As Built Figure, dated August 9, 2018

2018-08-09. ACP 4 Site SS-15 Figure, dated August 9, 2018

2018-11-24. ACP-4 Inspection and Adaptive Management, dated November 24, 2018

2018-12-20 ACP-4 & BRAC DPW Year-End Monitoring Report, dated December 20, 2018

2020-07-02. ACP-4 Adaptive Management As-Built Figure, dated July 2, 2020

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## Appendix G.3
## Hyperlinked MS4 Stream Restoration Project Correspondence

2019-07-24 MS4 USFWS Bog Turtle Composite Submission

2019-07-24 MS4 USFWS Bog Turtle Submission Letter & 06-28-19 Field Meeting Minutes with Measures

2019-09-30. MS4 USFWS Bog Turtle No Effect Determination

2019-10-15 MS4 PADEP State Programmatic General Permit #5

2020-01-16 MS4 CENAB Nationwide #27 Permit Authorization

2020-01-16 MS4 CENAB Nationwide #27 Permit Authorization Signature Page

2020-04-23 MS4 YCDD E&S Plan Approval

2020-05 to 06 MS4 Site Coordination Review Reports – Repairs

2020-07-08 MS4 PADEP EA6703219-001 and Waiver #16 Authorization Sites 1 – 3

2020-08-18 MS4 Draft Pollutant Reduction Credit Determination – Memo

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HDR