



U.S. Fish & Wildlife Service

# Presquile National Wildlife Refuge

*Comprehensive Conservation Plan*

*October 2012*



*Front cover:*

*Marsh and tidal swamp forest along the James River oxbow*

Bill Wood

*Bald eagle*

Steve Maslowski/USFWS

*Great blue heron*

Bill Wood

*Prothonotary warbler*

USFWS

*Back cover:*

*Marsh/tidal swamp forest*

Bill Wood



*This blue goose, designed by  
J.N. "Ding" Darling, has become  
the symbol of the National Wildlife  
Refuge System.*

The U.S. Fish and Wildlife Service (Service) is the principal Federal agency responsible for conserving, protecting, and enhancing fish, wildlife, plants, and their habitats for the continuing benefit of the American people. The Service manages the National Wildlife Refuge System comprised of over 150 million acres including over 550 national wildlife refuges and thousands of waterfowl production areas. The Service also operates 70 national fish hatcheries and 81 ecological services field stations. The agency enforces Federal wildlife laws, manages migratory bird populations, restores nationally significant fisheries, conserves and restores wildlife habitat such as wetlands, administers the Endangered Species Act, and helps foreign governments with their conservation efforts. It also oversees the Federal Assistance Program which distributes hundreds of millions of dollars in excise taxes on fishing and hunting equipment to state wildlife agencies.

Comprehensive Conservation Plans (CCPs) provide long-term guidance for management decisions on a refuge and set forth goals, objectives, and strategies needed to accomplish refuge purposes. CCPs also identify the Service's best estimate of future needs. These plans detail program levels that are sometimes substantially above current budget allocations and, as such, are primarily for Service strategic planning and program prioritization purposes. CCPs do not constitute a commitment for staffing increases, operational and maintenance increases, or funding for future land acquisition.



**U.S. Fish & Wildlife Service**

# Presquile National Wildlife Refuge

## *Comprehensive Conservation Plan October 2012*

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OCT 09 2012

**Acting**



## U.S. Fish & Wildlife Service

# Presquile National Wildlife Refuge

## *Comprehensive Conservation Plan October 2012*

### **Presquile Refuge Vision Statement**

Presquile National Wildlife Refuge exemplifies the majesty of our natural world and the significance of the Lower James River as a major tributary of the Chesapeake Bay watershed. Throughout the year, bald eagles perch on the island's forested shores and survey the rich assemblage of wildlife: the wake of the prehistoric sturgeon heading to spawn, basking turtles in the warm spring sun, colorful warblers darting amongst trees all summer, and thousands of wintering waterfowl resting in the quiet waters of the winding river.

This isolated island bridges the modern world to its long and storied history of people connecting to the land. The joyful sound of children learning in the natural classroom echoes through the forest in this gateway to wild places. Stewardship fostered here generates action beyond the river in communities across their watershed.



## U.S. Fish & Wildlife Service

# Presquile National Wildlife Refuge

## *Comprehensive Conservation Plan October 2012*

### Summary

<b>Type of Action:</b>	Administrative–Development of a Comprehensive Conservation Plan
<b>Lead Agency:</b>	U.S. Department of the Interior, U.S. Fish and Wildlife Service
<b>Location:</b>	Presquile National Wildlife Refuge Chesterfield County, Virginia
<b>Administrative Headquarters:</b>	Eastern Virginia Rivers National Wildlife Refuge Complex Warsaw, Virginia
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This Comprehensive Conservation Plan (CCP) for the 1,329-acre Presquile National Wildlife Refuge (NWR, refuge) is the culmination of a planning effort involving Virginia State agencies, local partners, refuge neighbors, private landowners, and the local community. This CCP establishes 15-year management goals and objectives for wildlife and habitats, public use, and administration and facilities.

Our management will emphasize specific refuge habitats to support priority refuge species whose habitat needs benefit other species of conservation concern that are found around the refuge and in the larger landscape of the lower James River. In particular, we will promote habitat for priority birds identified in Bird Conservation Region 30, such as migratory waterfowl, waterbirds, and mature forest-dependent birds. Other priority refuge resources of concern, including the federally endangered Atlantic sturgeon and federally threatened sensitive joint-veitch. Under this plan, we will protecting, restoring, and monitoring the refuge's tidal freshwater marsh, tidal swamp forest, and mixed mesic forest habitats, and promote natural forest succession on a portion of refuge land that is currently being managed as grassland. Our activities will include regularly evaluating and adapting our actions in conjunction with monitoring climate change impacts, including sea level rise.

We will increase our efforts to protect cultural resources on the refuge, as well as expand our understanding of those resources and their role in the area's cultural history. We will also enhance public use opportunities on the refuge. In particular, we will expand our on-refuge environmental education program through our partnership with the James River Association and bring an increased number of students to the refuge to participate in environmental education programs. We will continue to collaborate with new and existing partners to promote off-refuge environmental education and will expand the interpretive program on the refuge.

We will continue the current 3-day deer hunting program; however, under this plan we will consider extending the season length by approximately 2 days to provide a higher quality hunt experience. Under this plan, we also propose to evaluate, within 5 years, opportunities to open the refuge to a turkey hunt and initiate a program for youth hunters, if there is interest and resources are available.

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## Chapter 1



USFWS

*Great egret*

# The Purpose of, and Need for, Action

- 1.1 Introduction
- 1.2 The Purpose of, and Need for, the Action
- 1.3 The Service and Refuge System Policies and Mandates Guiding Planning
- 1.4 Conservation Plans and Initiatives Guiding the CCP
- 1.5 Refuge Purpose, Vision, and Goals

## 1.1 Introduction

This Comprehensive Conservation Plan (CCP) for Presquile National Wildlife Refuge (Presquile NWR, refuge) was prepared pursuant to the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd–668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Refuge Improvement Act) (Public Law 105-57; 111 Stat. 1253); the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 et seq.; 83 Stat. 852); and in conformance with United States (U.S.) Fish and Wildlife Service (Service, USFWS, we, our) policy and legal mandates (see “The Service, its Policies and Legal Mandates,” below). The development of a CCP is subject to NEPA because the adoption and implementation of management actions analyzed in a CCP have the potential to affect the natural and human environment. This CCP will serve as a guide for the refuge’s management over the next 15 years.

This CCP has five chapters. Chapter 1 explains the purpose of, and need for, preparing a CCP, and sets the stage for four subsequent chapters and the appendixes. Chapter 1 also:

- Defines the refuge’s regional context and planning analysis area.
- Presents the mission, policies, and mandates affecting the development of the plan.
- Identifies other conservation plans we used as references.
- Clarifies the vision and goals that drive refuge management.

Chapter 2, “The Planning Process,” describes the planning process we followed, including public and partner involvement, in the course of developing this plan.

Chapter 3, “Existing Environment,” describes the refuge’s regional and local setting, physical attributes, habitats, species, other natural resources, and the human-created environment of roads, trails, croplands, impoundments, and buildings.

Chapter 4, “Management Direction and Implementation,” presents the actions, goals, objectives, and strategies that will guide our decision-making and land management for the refuge. It also outlines the staffing and funding needed to accomplish that management.

Chapter 5, “Consultation, Coordination, and Preparation,” summarizes how the Service involved the public and our partners in the planning process. Also, it includes a list of Service and non-Service contributors to the planning effort.

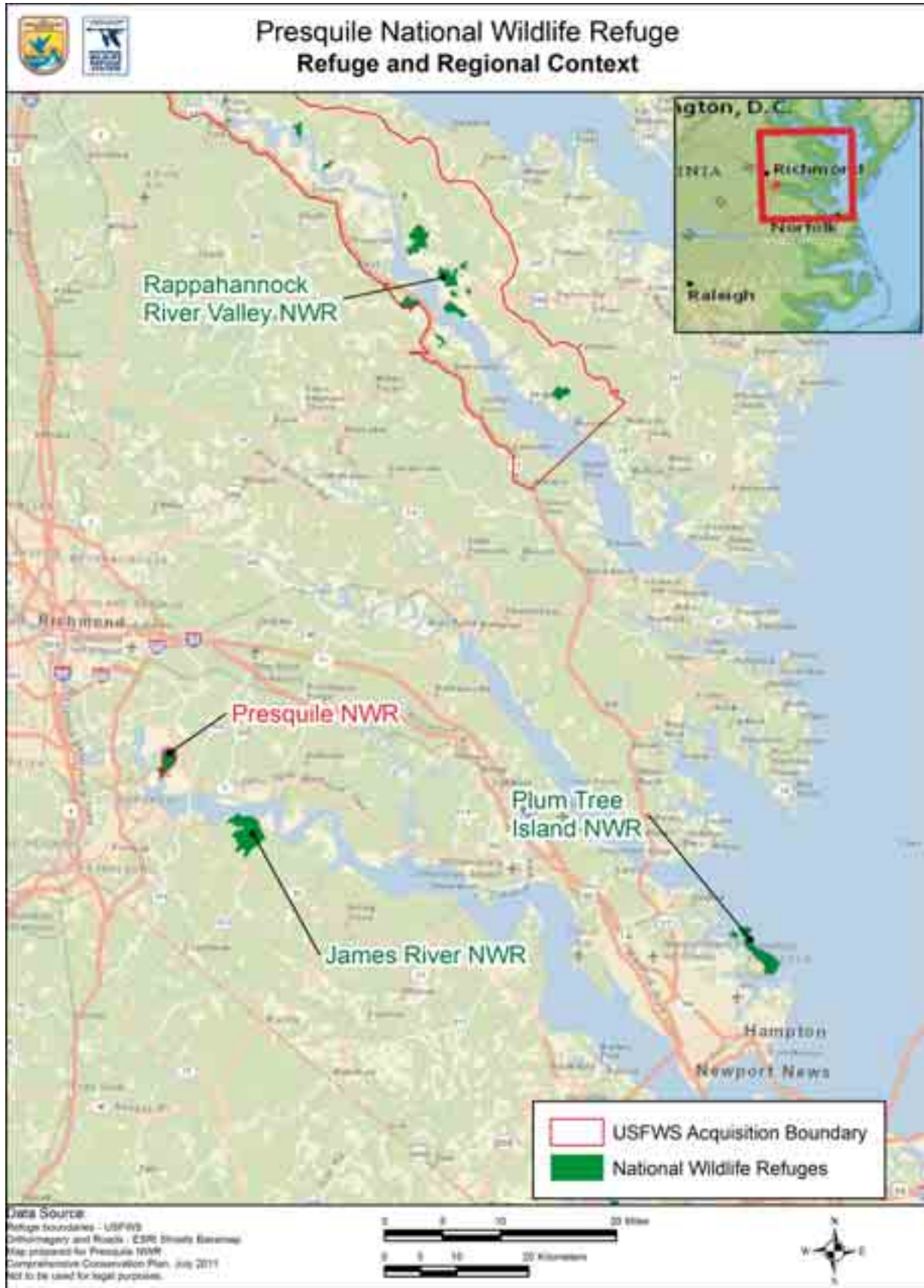
A bibliography, glossary, list of acronyms and abbreviations, list of species scientific names, and five appendixes provide additional supporting documentation and references used in this document.

### Project Area

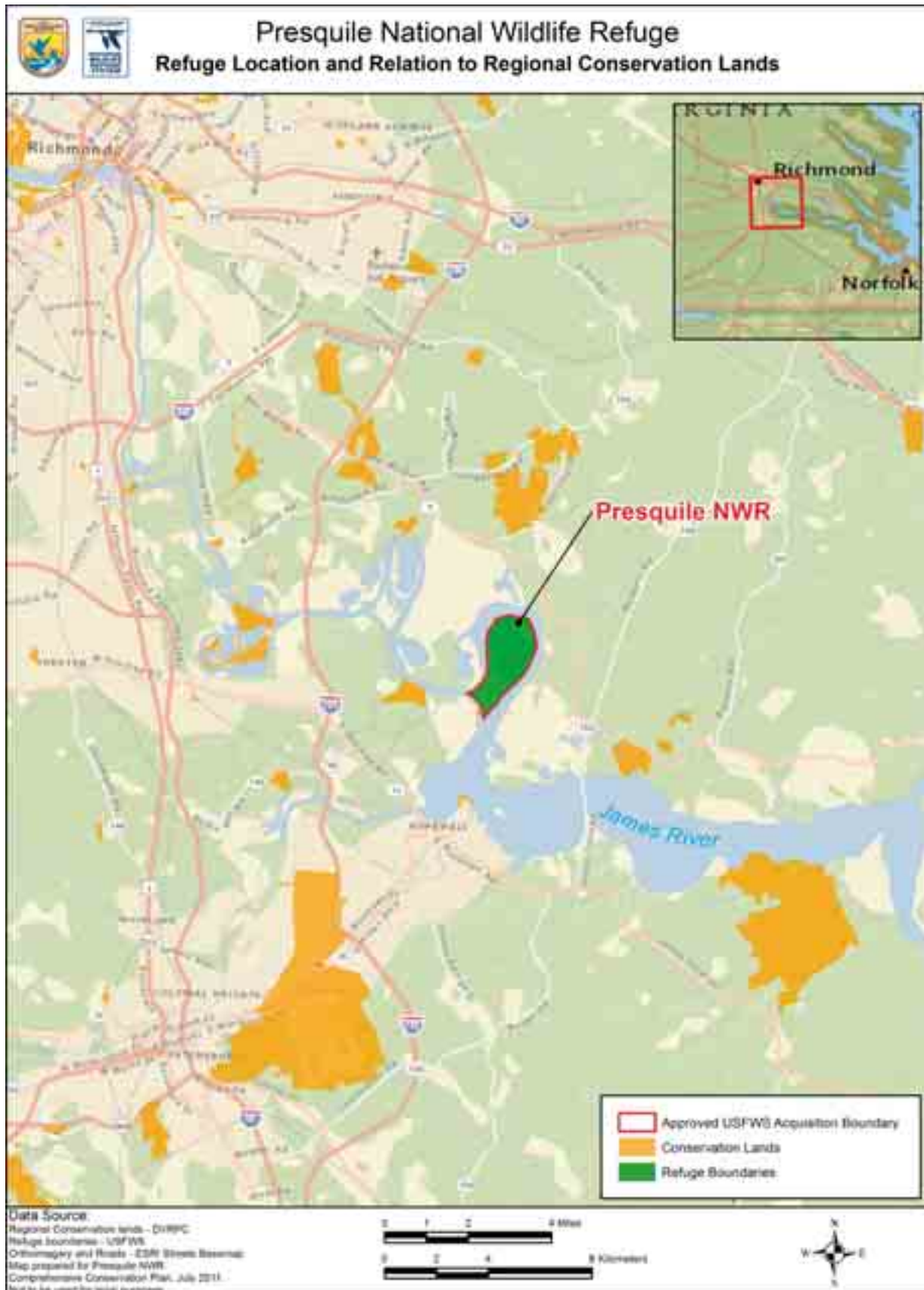
Presquile NWR is located near Hopewell, Virginia, in Chesterfield County, and is approximately 20 miles southeast of Richmond, the State capital. The regional context of the project area is defined by the interactions of the nearby metropolitan area, the James River watershed, and the Chesapeake Bay Estuary (map 1.1).

Lands within the refuge were transferred to the U.S. Government as a gift under the provisions of the will of Mr. A.D. Williams. Presquile NWR was officially established in 1953 “for use as an inviolate sanctuary, or for any other management purpose, for migratory birds” (Migratory Bird Conservation Act, 16 U.S.C. § 715d) (maps 1.2 and 1.3). It is one of many important migratory bird stopover sites along the Atlantic Flyway, providing protected breeding habitat for State-listed threatened and endangered species, as well as many neotropical migrant bird species.

Map 1.1 Presquile NWR and Regional Context



Map 1.2 Refuge Location and Relation to Regional Conservation Lands



Map 1.3 Refuge Land and Approved Acquisition Boundary





Cyrus Brame/USFWS

*Little Creek in winter*

The 1,329-acre refuge comprises a variety of wildlife habitats: open waters of the James River and associated backwaters, tidal swamp forest, tidal freshwater marshes, grasslands, mixed mesic forest (transitional and mature), and river escarpment. This total acreage includes 1 acre held by the Service in right-of-way easements on adjacent private properties.

In 2003, the refuge was administratively complexed with Rappahannock NWR, James River NWR, and Plum Tree Island NWR to form the Eastern Virginia Rivers NWR Complex (refuge complex) to increase management efficiencies. At that time, Presquile NWR became an unstaffed refuge. The refuge complex staff share responsibility for the four refuges and are located at Rappahannock NWR and in Charles City, Virginia. The CCP for Rappahannock NWR was completed in December 2009 and did not address Presquile NWR. James River and Plum Tree Island NWRs will have their own CCPs.

## 1.2 The Purpose of, and Need for, the Action

This CCP has been developed in the context of a changing and dynamic environment. The region's natural environment, human uses, and management direction have all changed over the past 60 years since refuge establishment. This CCP is designed to address management and protection of valuable natural resources into the future; a future where continued change is even more likely to occur. Thus, the purpose of this CCP is to provide strategic management direction to ensure that our management of the refuge will best mesh four key areas of concern. "Strategic" means we will implement approaches that are ecologically sound and sustainable in light of physical and biological change, and are also practical, viable, and economically realistic. In our professional judgment, this CCP best:

- Abides by and contributes to the mission, mandates, and policies of the Service and the National Wildlife Refuge System (Refuge System).
- Meets the refuge's goals.
- Addresses key issues.



- Responds to public concerns.

While explained in more depth below in this chapter, this CCP addresses the following:

- (1) The mission of the Refuge System is:

*“To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”*

- (2) Important Refuge System laws and policies concerning habitat management and wildlife conservation include a key Service policy addressing biological integrity, diversity, and environmental health, known as “BIDEH.” Other Service policies regarding human uses require that all uses of a refuge be evaluated for their appropriateness, and direct that inappropriate, incompatible, or harmful uses be prevented or eliminated. Compatible uses can be allowed and, in particular, six priority wildlife-dependent public uses should be facilitated whenever possible. Not every aspect of refuge management implemented at earlier times complies with current directives. Other policies and laws direct how long-term refuge planning is conducted. This CCP is designed to bring all aspects of refuge management into conformity with current laws and policies.
- (3) The refuge’s goals describe the desired future conditions of the refuge and provide a framework for developing alternative objectives to achieve those desired conditions. Along with a vision statement, five fundamental goals were developed for Presquile NWR to frame its purpose for “use as an inviolate sanctuary, or for any other management purpose, for migratory birds” and define how this can be best achieved in the future. Two of the goals direct management attention to protection and restoration of the ecological integrity, diversity, and sustainability of key habitat types (forested and emergent wetlands and mature and transitional mixed mesic forest). Other refuge goals address cultural resources, environmental education, and public uses of the refuge.
- (4) Through the NEPA scoping process and the refuge’s understanding of its particular challenges, and incorporating the best available scientific and technical information, several key issues have been identified which this CCP addresses. They are grouped into the following two broad categories:
  - Biological management
  - Public use and interpretation of environmental and cultural resources

We discuss the key issues in more detail in chapter 2.

NEPA requires that a thorough analysis be completed of a range of alternatives, including the proposed action and no action. In the draft CCP/Environmental Assessment (EA) process, we analyzed the socioeconomic, biological, physical, and cultural consequences of implementing two alternatives that represented different ways to achieve the four areas of concern outlined above. Alternative A fulfilled the NEPA requirement for a “no action” alternative; one that proposes no change in the current management of the refuge. Alternative B focused on species of conservation concern, with emphasis on forest-dependent species. We selected alternative B as the preferred alternative, and the specific actions included under that alternative are presented in chapter 4 of this CCP.

This CCP provides management direction for the next 15 years that:

- States clearly the desired future conditions of refuge habitat, wildlife, visitor services, staffing, and facilities.
- Provides State agencies, refuge neighbors, visitors, and partners with a clear understanding of the reasons for refuge management actions.
- Ensures that refuge management reflects the policies, legal mandates, and the mission of the Refuge System and refuge purpose.
- Ensures the compatibility of current and future public use.
- Provides long-term continuity in refuge management.
- Provides justification for our staffing, operations, and maintenance, and projected budget requests.

After its completion, the CCP will be reviewed, evaluated, and subsequently updated approximately every 15 years. However, if and when significant new information becomes available, ecological conditions change, major refuge expansion occurs, or when we identify the need to do so, the plan can be reviewed sooner. All plan revisions will require NEPA compliance.

In developing and adopting a CCP for Presquile NWR, we wanted to accomplish the following goals:

- Goal 1.** Forested and Emergent Wetlands: Protect, maintain, and restore the integrity of the refuge's tidal swamp forest and tidal freshwater marsh to sustain native plants and wildlife, including species of conservation concern, and benefit aquatic resources of the James River watershed and Chesapeake Bay.
- Goal 2.** Upland Habitats: Protect, restore, and enhance the refuge's upland habitats, with emphasis on the mixed mesic forest ecological community, to sustain plants and wildlife native to the James River area, including species of conservation concern.
- Goal 3.** Cultural Resources: Protect and conserve the refuge's cultural resources and landscape, and seek opportunities to increase knowledge and appreciation of the refuge's history as part of the James River region.
- Goal 4.** Environmental Education: Provide environmental education experiences for visitors to inspire appreciation and stewardship of the refuge in relation to the James River watershed, the Chesapeake Bay Estuary, and the Refuge System.
- Goal 5.** Wildlife-dependent Recreation: Provide wildlife-dependent recreational opportunities (interpretation, wildlife observation, nature photography, and hunting) for visitors to enjoy and connect with nature, and to develop an enhanced appreciation for, and understanding of, the refuge's natural and cultural resources.

Development of a CCP addresses three needs. First, the Refuge Improvement Act requires that all refuges have a CCP in place to help fulfill the mission of the Refuge System by October 9, 2012.

Second, there is currently no master plan establishing priorities and ensuring consistent and integrated management for Presquile NWR. This CCP will guide management decisions and actions on the refuge during the next 15 years by presenting the combination of management goals, objectives, and strategies to be implemented on the refuge. The CCP will also help Virginia's natural resource agencies, our conservation partners, local communities, and the public understand our priorities and work with us to achieve common goals.

Finally, management should be consistent with current policies. This CCP brings the refuge into conformity with all current law and policies.

### **1.3 The Service and Refuge System Policies and Mandates Guiding Planning**

In addition to the laws already mentioned, this section highlights Service policy, legal mandates, and existing regional, State, and local resource plans that directly influenced the development of this CCP.

#### **The U.S. Fish and Wildlife Service Mission and Policies**

The Service is a bureau within the Department of the Interior (Department). The Service's mission is, "Working with others, to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people."

Congress entrusts to the Service the conservation and protection of these national natural resources: migratory birds and fish, federally listed endangered or threatened species, interjurisdictional fish, wetlands, certain marine mammals, and national wildlife refuges. The Service also enforces Federal wildlife laws and international treaties on importing and exporting wildlife, assists states with their fish and wildlife programs, and helps other countries develop conservation programs.

The Service Manual (USFWS 2012a) contains the standing and continuing directives on implementing our authorities, responsibilities, and activities. The Service publishes special directives that affect the rights of citizens or the authorities of other agencies separately in the Code of Federal Regulations (CFR); the Service Manual does not duplicate them (<http://www.fws.gov/policy/direct.html>; accessed May 2012).

#### **The National Wildlife Refuge System Mission**

The Service administers the Refuge System, which is the world's largest network of lands and waters set aside specifically for the conservation of wildlife and the protection of ecosystems. Over 550 national wildlife refuges encompass more than 150 million acres of lands and waters in all 50 States and several island territories. Each year, more than 40 million visitors hunt, fish, observe, and photograph wildlife, or participate in environmental education and interpretation on refuges (USFWS 2007a).

In 1997, President Clinton signed into law the Refuge Improvement Act. This act establishes a unifying mission for the Refuge System and a new process for determining the compatibility of public uses on refuges, and requires us to prepare a CCP for each refuge. The act states that the Refuge System must focus on wildlife conservation first. It also states that the mission of the Refuge System, coupled with the purpose(s) for which each refuge was established, will provide the principal management direction on that refuge. The mission of the Refuge System is, "To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans" (National Wildlife Refuge System Improvement Act; Public Law 105-57).

**Policy on the National Wildlife Refuge System Mission, Goals, and Purposes**

This policy (601 FW 1) sets forth the Refuge System mission noted above, how it relates to the Service mission, and explains the relationship of the Refuge System mission and goals, and the purpose(s) of each unit in the Refuge System. In addition, it identifies the following Refuge System goals:

- Conserve a diversity of fish, wildlife, and plants.
- Develop and maintain a network of habitats.
- Conserve those ecosystems, plant communities, and wetlands that are unique within the U.S.
- Provide and enhance opportunities to participate in compatible, wildlife-dependent recreation.
- Help to foster public understanding and appreciation of the diversity of fish, wildlife, and plants and their habitats.



Meghan Carfoni/USFWS

This policy also establishes management priorities for the Refuge System:

*Tidal swamp forest*

- Conserve fish, wildlife, and plants and their habitats.
- Facilitate compatible wildlife-dependent recreational uses.
- Consider other appropriate and compatible uses.

**Policy on Maintaining Biological Integrity, Diversity, and Environmental Health**

This policy (601 FW 3) provides guidance on maintaining or restoring the biological integrity, diversity, and environmental health of the Refuge System, including the protection of a broad spectrum of fish, wildlife, and habitat resources in refuge ecosystems. It provides refuge managers with a process for evaluating the best management direction to prevent the additional degradation of environmental conditions and restore lost or severely degraded components of the environment. It also provides guidelines for dealing with external threats to the biological integrity, diversity, and environmental health of a refuge and its ecosystem.

**Policy on Coordination and Cooperative Work with State Fish and Wildlife Agencies**

This policy (601 FW 7) establishes procedures for coordinating and working cooperatively with state fish and wildlife agency representatives on management of units of the Refuge System. Effective conservation of fish, wildlife, plants, and their habitats depends on the professional relationship between managers at the state and Federal levels. We acknowledge the unique expertise and role of state fish and wildlife agencies in the management of fish and wildlife. It encourages refuge managers to invite, coordinate, cooperate, and collaborate with state fish and wildlife agencies in a timely and meaningful opportunities to participate in the development and implementation of programs conducted under this policy. This opportunity will most commonly occur through state fish and wildlife agency representation on the CCP planning team.

**Policy on Refuge System Planning**

This policy (602 FW 1, 2, 3) establishes the requirements and guidance for Refuge System planning, including CCPs and step-down management plans. It states that the Service will manage all refuges in accordance with an approved CCP that, when implemented, will help:

- Achieve refuge purposes.
- Fulfill the Refuge System mission.
- Maintain and, where appropriate, restore the ecological integrity of each refuge and the Refuge System.
- Achieve the goals of the National Wilderness Preservation System and the National Wild and Scenic Rivers System.
- Conform to other applicable laws, mandates, and policies.

This planning policy provides step-by-step directions and identifies the minimum requirements for developing all CCPs. Among them, the Service is to review any existing special designation areas such as wilderness and wild and scenic rivers, specifically address the potential for any new special designations, conduct a wilderness review, and incorporate a summary of that review into each CCP (602 FW 3).

#### **Policy on the Appropriateness of Refuge Uses**

Federal law and Service policy provide the direction and planning framework for protecting the Refuge System from inappropriate, incompatible, or harmful human activities and ensuring that visitors can enjoy its lands and waters. This policy (603 FW 1) provides a national framework for determining appropriate refuge uses to prevent or eliminate those that should not occur in the Refuge System. It describes the initial decision process the refuge manager follows when first considering whether to allow a proposed use on a refuge. An appropriate use must meet at least one of the following four conditions:

- (1) The use is a wildlife-dependent recreational use as identified in the Refuge Improvement Act.
- (2) The use contributes to fulfilling the refuge purpose(s), the Refuge System mission, or goals or objectives described in a refuge management plan approved after October 9, 1997, the date the Refuge Improvement Act became law.
- (3) The use is within the boundaries set by state regulations for the take of fish and wildlife.
- (4) The use has been found to be appropriate after concluding a specified findings process using 10 criteria.

Findings of appropriateness for specific public uses at Presquile NWR can be reviewed in appendix B.

#### **Policy on Compatibility**

This policy (603 FW 2) complements the appropriateness policy. Once a refuge manager finds a use appropriate, he or she conducts a further evaluation through a compatibility determination assessment. Compatibility determinations completed for those public uses determined to be appropriate are included in appendix B as part of this CCP.

The direction in 603 FW 2 provides guidelines for determining compatibility of uses and procedures for documentation and periodic review of existing uses. Highlights of the guidance in that chapter follows:

- The Refuge Improvement Act and its regulations require an affirmative finding by the refuge manager on the compatibility of a public use before the Service allows it on a refuge.

- A compatible use is one “that will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge.”
- The act defines six priority wildlife-dependent uses that are to receive enhanced consideration on refuges: hunting, fishing, wildlife observation and photography, and environmental education and interpretation.
- The refuge manager may authorize those priority uses on a refuge when they are compatible and consistent with public safety.
- When the refuge manager publishes a compatibility determination, it will stipulate the required maximum reevaluation dates: 15 years for wildlife-dependent recreational uses or 10 years for other uses.
- The refuge manager may reevaluate the compatibility of a use at any time. For example, it can occur sooner than its mandatory date, or even before the Service completes the CCP process, if new information reveals unacceptable impacts or incompatibility with refuge purposes (603 FW 2.11, 2.12).
- The refuge manager may allow or deny any use, even one that is compatible, based on other considerations such as public safety, policy, or available funding.

#### **Policy on Wildlife-dependent Public Uses**

This policy (605 FW 1) of the Service manual presents specific guidance on implementing management of the priority public uses, including the following criteria for a quality, wildlife-dependent recreation program. A quality program is one that:

- Promotes safety of participants, other visitors, and facilities.
- Promotes compliance with applicable laws and regulations and responsible behavior.
- Minimizes or eliminates conflict with fish and wildlife population or habitat goals or objectives in an approved plan.
- Minimizes or eliminates conflicts with other compatible wildlife-dependent recreation.
- Minimizes conflicts with neighboring landowners.
- Promotes accessibility and availability to a broad spectrum of the American people.
- Promotes resource stewardship and conservation.
- Promotes public understanding and increases public appreciation of America’s natural resources and our role in managing and conserving these resources.
- Provides reliable and reasonable opportunities to experience wildlife.
- Uses facilities that are accessible to people and blend into the natural setting.
- Uses visitor satisfaction to help to define and evaluate programs.

#### **Refuge System Vision—Conserving the Future (2011)**

In July 2011, the Refuge System convened the “Conserving the Future—Wildlife Refuges and the Next Generation” conference to renew and update its 1999 vision document, originally called “Fulfilling the Promise.” After the conference and an extensive public engagement process, a renewed vision document was finalized in

October 2011 (USFWS 2011). The document has 20 recommendations, covering a variety of topics from habitat and species management, visitor services, refuge planning, land conservation, communications, building partnerships, and urban refuges. Currently, implementation teams are developing strategies to help us accomplish the vision. We will incorporate implementation strategies as appropriate, in our step-down plans and refuge programs.

### Other Mandates

Federal laws require the Service to identify and preserve its important historic structures, archaeological sites, and artifacts. NEPA mandates our consideration of cultural resources in planning Federal actions. The Refuge Improvement Act requires that the CCP identify the refuge's archaeological and cultural values. In addition, we consult with the State Historic Preservation Officer (SHPO) on the draft and final CCPs. The following four Federal laws also cover historic and archaeological resources on national wildlife refuges:

- The Archaeological Resources Protection Act (16 U.S.C. § 470aa–470ll; Pub.L. 96–95), approved October 31, 1979 (93 Stat. 721). The Archaeological Resources Protection Act establishes detailed requirements for issuing permits for any excavation for, or removal of, archaeological resources from Federal or Native American lands. It also establishes civil and criminal penalties for the unauthorized excavation, removal, or damage of those resources; for any trafficking of those resources removed from Federal or Native American land in violation of any provision of Federal law; and for interstate and foreign commerce in such resources acquired, transported, or received in violation of any state or local law.
- The Archaeological and Historic Preservation Act (16 U.S.C. § 469–469c; Pub.L. 86–523), approved June 27, 1960 (74 Stat. 220), as amended by Pub.L. 93–291 approved May 24, 1974 (88 Stat. 174). The Archaeological and Historic Preservation Act carries out the policy established by the Historic Sites Act (see below). It directs Federal agencies to notify the Secretary of the Interior whenever they find that a Federal or federally assisted licensed or permitted project may cause the loss or destruction of significant scientific, prehistoric, or archaeological data. The act authorizes the use of appropriated, donated, or transferred funds for the recovery, protection, and preservation of that data.
- The Historic Sites, Buildings, and Antiquities Act (16 U.S.C. § 461–462, 464–467; 49 Stat. 666) of August 21, 1935, popularly known as the Historic Sites Act, as amended by Pub.L. 89–249, approved October 9, 1965 (79 Stat. 971). This Historic Sites Act declares it a national policy to preserve historic sites and objects of national significance, including those located on refuges. It provides procedures for designating, acquiring, administering, and protecting these sites and objects. Among other things, National Historic and Natural Landmarks are designated under the authority of this act. The remains of the Presquile House Site and Cemetery at Presquile NWR have a historic structure designation.
- The National Historic Preservation Act of 1966 (16 U.S.C. § 470–470b, 470c–470n), Pub.L. 89–665, approved October 15, 1966 (80 Stat. 915), and repeatedly amended. The National Historic Preservation Act provides for the preservation of significant historical features (buildings, objects, and sites) through a grant-in-aid program to the states. It establishes the National Register of Historic Places (National Register) and a program of matching grants under the existing National Trust for Historic Preservation (16 U.S.C. § 468–468d). This act establishes an Advisory Council on Historic Preservation, which became a permanent, independent agency in Pub.L. 94–422, approved September 28, 1976 (90 Stat. 1319). The act created the Historic Preservation Fund. It directs Federal agencies to take into account the effects of their actions on items or sites listed or eligible for listing on the National Register. One previously documented archaeological site (Site 44CF120) at Presquile NWR may be eligible for listing in the National Register.



*Cemetery at Presquile National Wildlife Refuge*

The Service also owns and cares for museum properties. The most common are archaeological, zoological, and botanical collections, and historical photographs, objects, and art. Each refuge maintains an inventory of its museum property. Our Regional museum property coordinator in Hadley, Massachusetts, guides the refuges in caring for that property, and helps us comply with the Native American Grave Protection and Repatriation Act and Federal regulations governing Federal archaeological collections. Our program ensures that those collections will remain available to the public for learning and research.

Other Federal resource laws are also important to highlight as they are integral to developing a CCP:

- The Wilderness Act of 1964 (16 U.S.C. 1131–1136; P.L. 88–577) establishes a National Wilderness Preservation System that is composed of federally owned areas designated by Congress as “wilderness areas.” The act directs each agency administering designated wilderness to preserve the wilderness character of areas within the National Wilderness Preservation System, and to administer the National Wilderness Preservation System for the use and enjoyment of the American people in a way that will leave those areas unimpaired for future use and enjoyment as wilderness. The act also directs the Secretary of the Interior, within 10 years, to review every roadless area of 5,000 acres or more and every roadless island (regardless of size) within the Refuge System and National Park System for inclusion in the National Wilderness Preservation System. Service planning policy requires that the Service evaluate the potential for wilderness on refuge lands, as appropriate, during the CCP/EA development process. Our wilderness review is included in this CCP as appendix D.
- The Wild and Scenic Rivers Act of 1968, as amended, selects certain rivers of the Nation possessing remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, preserves them in a free-flowing condition, and protects their local environments. Service planning policy requires that the Service evaluate the potential for wild and scenic rivers designation on refuge lands, as appropriate, during the CCP/EA development process. There are no rivers or segments of rivers that qualify for review within the boundary of the refuge; therefore, a wild and scenic river review was not conducted for this CCP.



Our mandates also include orders and initiatives by the President, Secretary of the Interior, or Director of the Service. We highlight four of these below:

- Presidential Initiative “America’s Great Outdoors” was issued on April 16, 2010. President Obama launched the America’s Great Outdoors Initiative as a conservation and recreation effort that would help increase connections with American citizens and the outdoors. America’s Great Outdoors takes as its premise that lasting conservation solutions should come from citizens who share in the responsibility to conserve, restore, and provide better access to our lands and waters.

In February 2011, a report was generated to lay the foundation for implementing this initiative. It can be accessed at: <http://americasgreatoutdoors.gov/> (accessed July 2012). This report identifies 10 major goals and 75 action items to advance this initiative, from expanding youth programs to increasing public awareness about conservation to better managing our public lands. Among these are three major place-based goals to focus the collective conservation and recreation efforts of the Federal government: create and enhance urban parks and greenspaces, renew and restore rivers, and conserves large, rural landscapes.

During the spring and summer of 2011, the Secretary sought recommendations for two specific projects in each state that would highlight opportunities to support the three place-based goals of the America’s Great Outdoors Initiative. In Virginia, the two projects identified are:

- (1) Fort Monroe National Historical Park, in Hampton, Virginia.
- (2) Captain John Smith Chesapeake National Historic Trail (NHT).

The Captain John Smith Chesapeake NHT crosses much of eastern tidal Virginia, including Presquile NWR. Additional details on the trail are provided below in section 1.4. We also discuss more on our efforts to cooperate on this project in chapter 3, section 3.9.

- Presidential Executive Order 13443–Facilitation of Hunting Heritage and Wildlife Conservation was issued on August 16, 2007. The purpose of this order is to direct Federal agencies that have programs and activities affecting public land management, outdoor recreation, and wildlife management, including the Department of the Interior and the Department of Agriculture, to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat. Federal agencies are directed to pursue certain activities listed in the order, consistent with their missions. Those activities include managing wildlife and wildlife habitats on public lands in a manner that expands and enhances hunting opportunities, and working with state and Tribal governments to manage wildlife and habitats to foster healthy and productive populations and provide appropriate opportunities for the public to hunt those species.
- Presidential Executive Order 13508–Chesapeake Bay Protection and Restoration was issued on May 12, 2009. This order furthers the purpose of the Clean Water Act of 1972, as amended (33 U.S.C. 1251 et seq.), and other laws “...to protect and restore the health, heritage, natural resources, and social and economic value of the Nation’s largest estuarine ecosystem and the natural sustainability of its watershed.” It recognizes the Chesapeake Bay as “a national treasure constituting the largest estuary in the United States and one of the largest and most biologically productive estuaries in the world.”

It directs the establishment of a Federal Leadership Committee chaired by the Administrator of the U.S. Environmental Protection Agency (EPA), or their designee, with participation by all Federal agencies with jurisdiction in the bay. The Committee's purpose is to lead the effort to restore the health of the Chesapeake Bay under a renewed commitment to control pollution from all sources as well as protect and restore habitat and living resources, conserve lands, and improve management of natural resources, all of which contribute to improved water quality and ecosystem health.

This order also develops a strategy for coordinated implementation of existing programs and projects, and an annual action plan and accomplishment reports. It also requires collaboration with state partners. The focus of the coordinated implementation plan will be to address: (1) water quality, (2) sources of pollution from agricultural lands and Federal lands and facilities, (3) protecting the bay's resources as the climate changes, (4) expanding opportunities for public access, (5) conserving landscapes and ecosystems, and (6) the monitoring and accountability of activities.

- Secretarial Order 3289–Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources was issued on September 14, 2009. This order establishes a Departmentwide, science-based approach to increasing our understanding of climate change and to coordinate an effective response to its impacts on tribes and on the land, water, ocean, fish and wildlife, and cultural heritage resources that the Department manages. The order establishes a “Climate Change Response Council” that will execute a coordinated Departmentwide strategy to increase scientific understanding and the development of adaptive management tools to address the impact of climate change on our natural and cultural resources. The council will help coordinate activities within and among Federal agencies. Land management agencies are directed to pursue appropriate activities to reduce their carbon footprint, adapt water management strategies to address the possibility of a shrinking water supply, and protect and manage land in anticipation of sea level rise, shifting wildlife populations and habitats, increased wildland fire threats, and an increase in invasive and exotic species.

In Chapter 4, “Environmental Consequences,” of the draft CCP/EA, we evaluated this plan's compliance with the acts noted above, as well as the Clean Water Act of 1977 as amended (33 U.S.C. 1251, et seq.; Public Law 107–303), the Clean Air Act of 1970 as amended (42 U.S.C. 7401 et seq.), and the Endangered Species Act of 1973 (16 U.S.C. 1531–1544), as amended. Our draft CCP/EA was written to comply with NEPA and the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500–1508). Appendix G, the Finding of No Significant Impact (FONSI), also documents our compliance with these Federal laws and how they were considered in our final decision.

Pursuant to the Federal Coastal Zone Management Act, the National Oceanic and Atmospheric Administration approved the Virginia Coastal Zone Management Program in 1986. In accordance with the Virginia Coastal Zone Management Program requirements, a Federal Consistency Determination was prepared for the proposed action and is included in appendix E of this CCP.

While Service and Refuge System policies and each refuge's purpose(s) provide the foundation for management, national wildlife refuges are administered consistent with a variety of other Federal laws, executive orders, treaties, interstate compacts, and regulations on the conservation and protection of natural and cultural resources. The “Digest of Federal Resource Laws of Interest to the U.S. Fish and Wildlife Service” lists them and can be accessed at: <http://www.fws.gov/laws/Lawsdigest.html> (accessed August 2012).

## 1.4 Conservation Plans and Initiatives Guiding the CCP

### National, Regional, and Local Plans and Priorities

Important guidance for habitat and visitor service management at Presquile NWR was provided by a series of plans and priorities that were in place or in development during our planning process for this CCP. We highlight them below.

#### **Landscape Dynamics: Land Cover and Land Use**

*North Atlantic Landscape Conservation Cooperative Development and Operations Plan (USFWS 2009a)*

The Service is developing a coordinated network of landscape conservation cooperatives across the U.S., in part to address major environmental and human-related factors that limit fish and wildlife populations at the broadest of scales, including developing adaptation strategies in response to climate change. The landscape conservation cooperative is utilizing principles of strategic habitat conservation to develop and communicate landscape-scale scientific information to shape conservation across the Northeastern U.S. This initial plan outlines the regional threats to conservation, and identifies priority species and habitats, as well as active regional partnerships. You may access the plan at: <http://www.fws.gov/northeast/science/pdf/NorthAtlanticLCCfinal.pdf> (accessed October 2012).

*The Nature Conservancy's Chesapeake Bay Lowlands Ecoregional Plan (TNC 2005)*

The Chesapeake Bay Lowlands ecoregion is centered on the Chesapeake Bay and includes most of Delaware, all of the Coastal Plain in Maryland and the District of Columbia, and coastal Virginia south to the James River. Five major types of conservation targets were identified in the Chesapeake Bay Lowlands ecoregion: (1) matrix forest blocks; (2) aquatic ecosystems; (3) “significant conservation areas” in tidal waters (for estuarine, coastal, and marine targets); (4) natural communities; and (5) species. To the extent that some of these conservation targets overlap with the species and habitats found on Presquile NWR, they have been considered as part of this plan development. You may access the plan at: <http://conserveonline.org/library/CBYplan.pdf/view.html> (accessed October 2012).

*The National Park Service's Captain John Smith Chesapeake National Historic Trail (NPS 2010)*

The National Park Service (NPS) administers the Captain John Smith Chesapeake NHT, the first national water trail in the U.S. Established in 2006, the trail consists of a series of water routes extending approximately 3,000 miles along the Chesapeake Bay and its tributaries in the States of Virginia, Maryland, Delaware, and in the District of Columbia, tracing the 1607 to 1609 voyages of Captain John Smith to chart the land and waterways of the Chesapeake Bay. The trail complements the diverse resources of the Chesapeake Bay Gateways Network—a partnership of existing water trails, parks, museums, wildlife refuges, and other sites that provide interpretation and bay access—to make additional opportunities for education, recreation, and heritage tourism. As the Nation's first national water trail, the Captain John Smith Chesapeake NHT will be most fully experienced by watercraft and at water access sites. However, visitors will also be able to view the trail setting and learn the stories from land. Numerous existing land sites along the voyage routes will interpret Smith's explorations, native settlements and cultures, and the environment of the early 17th century. You may access more information about the Captain John Smith Chesapeake NHT at: <http://www.nps.gov/cajo/index.htm> (accessed October 2012).

#### **Wildlife and Habitat**

*Virginia Wildlife Action Plan (VDGIF 2005)*

The Virginia Wildlife Action plan was completed in 2005 (VDGIF 2005). While creating a strategic focus for State fish and wildlife management agencies, this plan attempts to provide a Statewide perspective on conservation, presenting geographic, species, and habitat priorities. Presquile NWR protects several habitats that support species determined to be of conservation need by the State

of Virginia. As such, species of conservation priority noted in the Wildlife Action Plan were considered in development of the refuge's resources of concern. You may access the plan at: <http://www.bewildvirginia.org/wildlifeplan/plan.asp> (accessed October 2012).

*USFWS Birds of Conservation Concern (USFWS 2008a)*

This report identifies the migratory and nonmigratory bird species (beyond those already designated as federally threatened or endangered) that represent the Service's highest conservation priorities and draws attention to species in need of conservation action. The geographic scope includes the U.S. in its entirety, including island territories in the Pacific and Caribbean. Bird species considered for inclusion on lists in this report include nongame birds, gamebirds without hunting seasons, subsistence-hunted nongame birds in Alaska; and Endangered Species Act candidate, proposed endangered or threatened, and recently delisted species. Assessment scores are based on several factors, including population trends, threats, distribution, abundance, and area importance. You may access the report at: <http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf> (accessed October 2012).

*USFWS Migratory Bird Program Strategic Plan (USFWS 2004b)*

The Migratory Bird Program Strategic Plan provides direction for the Service's migratory bird management over the next decade (2004 to 2014). The plan contains a vision and recommendations for the Refuge System's place in bird conservation. It defines strategies for the Service, including the Refuge System, to actively support bird conservation through monitoring,



Bill Thompson

*Rose-breasted grosbeak*

conservation, consultation, and recreation. Considerations for, to the extent it is practical, standard monitoring protocols, habitat assessment and management, and promoting nature-based recreation and education to forward the vision of the Migratory Bird Program Strategic Plan have been incorporated into this plan. You may access the plan at: <http://www.fws.gov/migratorybirds/AboutUS/mbstratplan/finalmbstratplan.pdf> (accessed October 2012).

*North American Waterfowl Management Plan (NAWMP 2004) and Joint Venture Plans*

Originally written in 1986, the North American Waterfowl Management Plan describes a 15-year strategy for the U.S., Canada, and Mexico to restore and sustain waterfowl populations by protecting, restoring, and enhancing habitat. The plan committee, including representatives from all three countries, has modified the 1986 plan twice to account for biological, sociological, and economic changes that influenced the status of waterfowl and to allow cooperative habitat conservation. The most recent modification in 2004 updates the needs, priorities, and strategies for the next 15 years, and guides partners in strengthening the biological foundation of North American waterfowl conservation and stakeholder confidence in the direction of the plan. You may access the report at: <http://www.fws.gov/birdhabitat/NAWMP/files/ImplementationFramework.pdf> (accessed August 2012).

To convey goals, priorities, and strategies more effectively, that 2004 modification comprises two separate documents: Strategic Guidance and Implementation Framework. The former is for agency administrators and policy makers who set the direction and priorities for conservation. The latter includes supporting technical information for use by biologists and land managers.

The plans are implemented at the regional level in 14 habitat joint ventures and 3 species joint ventures (Arctic Goose, Black Duck, and Sea Duck). Presquile NWR lies in the Atlantic Coast Joint Venture, which includes all the Atlantic Flyway states from Maine to Florida and Puerto Rico. The Atlantic Coast Joint Venture Waterfowl Implementation Plan (2005) was completed in June 2005. The refuge lies within the plan's Lower James River Focus Area. You may view the focus area online at: <http://www.acjv.org> (accessed August 2012).

The waterfowl goal for the Atlantic Coast Joint Venture is to, "Protect and manage priority wetland habitats for migration, wintering, and production of waterfowl, with special consideration to black ducks, and to benefit other wildlife in the joint venture area." The Black Duck Joint Venture plan also relates to our CCP. American black ducks use the refuge during the winter and migration, but are less common during their breeding season as their primary breeding grounds are in Canada. The Black Duck Joint Venture Final Draft Strategic Plan (USFWS/CWS 1993) resides online at: <http://www.pwrc.usgs.gov/bdjh> (accessed August 2012). We referred to both joint venture plans in developing the management objectives and strategies under goals 1 and 2.



Bill Wood

*Canada geese*

*Bird Conservation Plan for the Mid-Atlantic Coastal Plain (Physiographic Area 44) (PIF 1999)*

Partners in Flight is a partnership of government agencies, private organizations, academic researchers, and private industry throughout North America focused on coordinating voluntary bird conservation efforts to benefit species at risk and

their habitats. Bird conservation regions (BCRs) have been developed to guide management on a regional scale. Version 1.0 of the Mid-Atlantic Coastal Plain BCR was completed in 1999. Presquile NWR is located within the Coastal Plain Physiographic Province and thus is considering the conservation priorities of this plan along with other conservation plans. You may access the plan at: [http://www.partnersinflight.org/bcps/plan/pl\\_44\\_10.pdf](http://www.partnersinflight.org/bcps/plan/pl_44_10.pdf) (accessed October 2012).

*Mid-Atlantic Coast Bird Conservation Region Implementation Plan (BCR 30) (USFWS 2008b)*

The implementation plan for the BCR 30 combines regional plans, assessments, and research completed over the past two decades to develop continental-based bird conservation efforts. Presquile NWR is located within the southern extent of the Mid-Atlantic Coastal Plain. Many of the priority species listed for BCR 30 are also species of concern listed within the Virginia Wildlife Action Plan. These rankings and the recommendations of the inventory have been considered along with other local and regional conservation priorities. You may access the plan at: [http://www.acjv.org/BCR\\_30/BCR30\\_June\\_23\\_2008\\_final.pdf](http://www.acjv.org/BCR_30/BCR30_June_23_2008_final.pdf) (accessed October 2012).

## 1.5 Refuge Purpose, Vision, and Goals

### Refuge Purpose

The purpose of Presquile NWR is “for use as an inviolate sanctuary, or for any other management purpose, for migratory birds” (Migratory Bird Conservation Act, 16 U.S.C. § 715d).

### Refuge Vision

The planning team developed the following vision statement to provide a guiding philosophy and sense of purpose in the CCP:

*Presquile National Wildlife Refuge exemplifies the majesty of our natural world and the significance of the Lower James River as a major tributary of the Chesapeake Bay watershed. Throughout the year, bald eagles perch on the island’s forested shores and survey the rich assemblage of wildlife: the wake of the prehistoric sturgeon heading to spawn, basking turtles in the warm spring sun, colorful warblers darting amongst trees all summer, and thousands of wintering waterfowl resting in the quiet waters of the winding river.*

*This isolated island bridges the modern world to its long and storied history of people connecting to the land. The joyful sound of children learning in the natural classroom echoes through the forest in this gateway to wild places. Stewardship fostered here generates action beyond the river in communities across their watershed.*

### Refuge Goals

The planning team developed refuge goals (see section 1.2) after considering the vision statement, the purposes for establishing the refuge, the missions of the Service and the Refuge System, and the mandates, plans, and conservation initiatives noted above. These goals are intentionally broad, descriptive statements of purpose. They highlight elements that we will emphasize in refuge management over the next 15 years.

## Chapter 2

Meghan Carfoglio/USFWS



*Looking downstream on Little Creek*

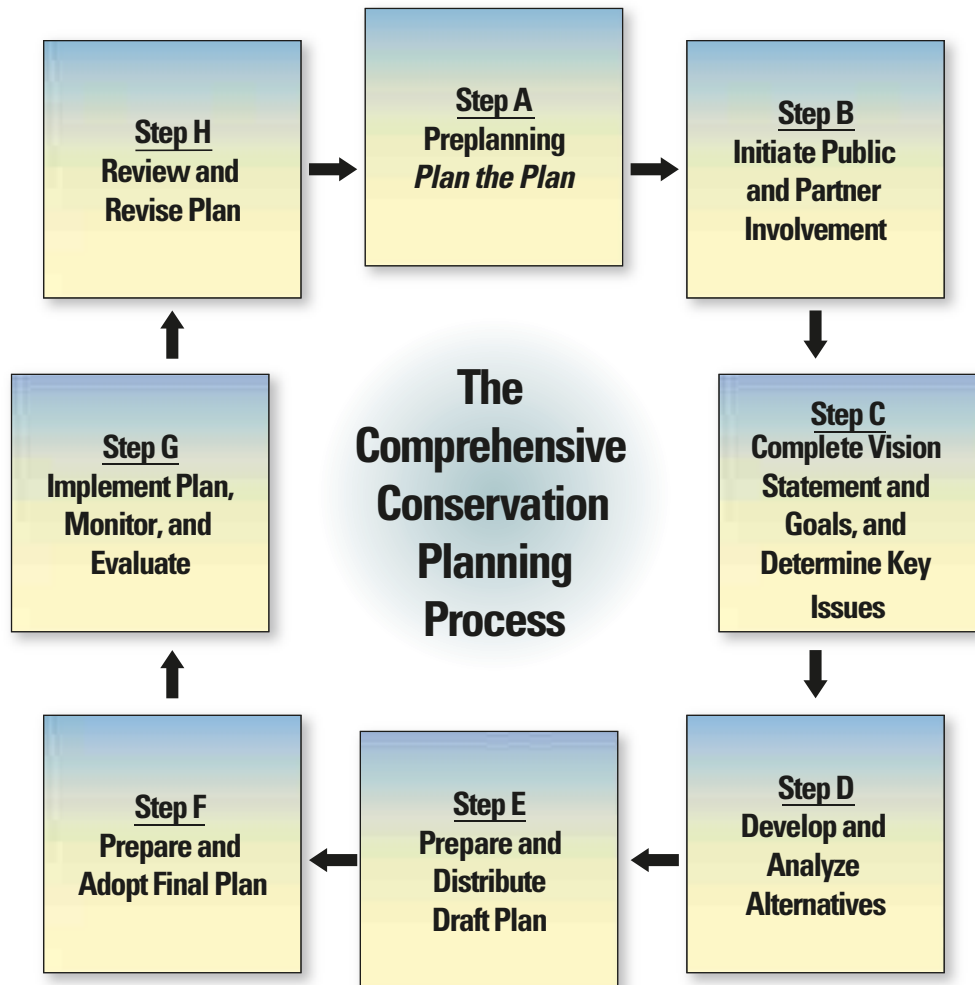
# The Planning Process

- 2.1 The Comprehensive Conservation Planning Process
- 2.2 Issues, Concerns, and Opportunities

## 2.1 The Comprehensive Conservation Planning Process

Service policy (602 FW 3) establishes a planning process that also complies with NEPA. The full text of the policy and a detailed description of the planning steps can be viewed at: <http://policy.fws.gov/602fw3.html> (accessed August 2012). We followed the process depicted below in developing this CCP. We completed process steps A through F with distribution of the final plan. These steps are described below in more detail and depicted in figure 2.1. Additional information regarding consultations and coordination that occurred during the preparation of this CCP is detailed in chapter 5.

Figure 2.1. Planning Process



### Step A: Initial Planning

We began preparing a CCP for Presquile NWR in January 2011. Initially, we focused on collecting information on the refuge's natural and cultural resources and public use program. The CCP core team of refuge and Regional Office staff and one representative from Virginia's Department of Game and Inland Fisheries (VDGIF) started meeting to discuss existing information, draft a vision statement, and prepare for the public scoping meeting and a technical meeting of State and Federal partners.

### Step B: Public Scoping

We initiated the public scoping process and distributed our first planning newsletter in March 2011. The planning newsletter included location, date, and



time information about upcoming public scoping meetings that would serve to inform the public about current refuge management and elicit input on topics of interest to the public. We distributed the newsletter to our mailing list of more than 160 parties, including media outlets, and posted announcements on the refuge Web site.

Two public scoping meetings were held on April 19, 2011, in Chester, Virginia, at the Chesterfield Public Library. One session was held from 2 to 4 p.m., and the other was held from 6:30 to 8:30 p.m. These meetings were attended by seven individuals from the surrounding communities. A third public scoping meeting was held in Richmond, Virginia, at the Maymont Park Stone Barn from 6:30 to 8:30 p.m. on April 20, 2011. This meeting was attended by six individuals. Refuge and planning team staff were also in attendance at all three meetings, but not included in the participant attendance noted.

#### **Steps C and D: Vision, Goals, and Alternatives Development**

The core team held their agency scoping workshop on April 20, 2011, from 10 a.m. to 3 p.m. The workshop was attended by 14 representatives from county, State, and Federal agencies. Refuge and planning team staff were also in attendance at this workshop, but not included in the participant attendance noted. The purpose of the meeting was to identify issues, determine the significant resource values attributed to the refuge, and to seek advice from technical experts on what resources of conservation concern in the refuge planning area should be a management priority. We continued to consult with experts throughout 2011 and 2012, and met regularly as a core team, as we developed and refined our alternatives.

#### **Step E: Draft CCP and NEPA Document**

Between May 2011 and August 2012, the core team worked on drafting the CCP/EA. We published a notice of availability in the *Federal Register* announcing our release of this draft for a 37-day period of public review and comment on August 8, 2012. During that comment period, we held three public meetings to obtain comments directly from individuals. We also received comments by regular mail and e-mail. After the comment period ended, we reviewed and summarized all of the comments received, developed our responses, and revised the CCP as warranted based on the comments. We include a summary of these comments, and our responses to them, as appendix F in this document.

#### **Step F: Adopt Final Plan**

We submitted the final plan to our Regional Director for review in September 2012. The Regional Director selected alternative B from the draft CCP/EA, along with several minor changes, to implement in the final plan. Our Regional Director also determined that a FONSI was appropriate (see appendix L), and certified that this final CCP meets agency compliance requirements, achieves refuge purposes, and helps fulfill the mission of the Refuge System. With an affirmative FONSI and other positive findings, the Regional Director approved the final CCP. We will publish another notice of availability in the *Federal Register* to announce the final decision and availability of the final plan. We will also distribute a newsletter announcing this decision to all contacts on our project list as well as post that newsletter on our Web site. These actions will complete planning step F to prepare and adopt a final plan.

#### **Step G: Implement, Monitor, and Evaluate Plan and Step H: Review and Revise Plan**

We will begin to implement the plan and monitor our success immediately after we publish our final notice of availability in the *Federal Register*. Over the 15-year life of the plan, we will annually review the plan to see if it requires any revisions. We will update and revise the plan at least every 15 years, or sooner if significant new information becomes available, ecological conditions change, a

## 2.2 Issues, Concerns, and Opportunities

major refuge expansion occurs, or we identify the need to do so during our annual reviews.

The Service defines an issue as “any unsettled matter requiring a management decision” (USFWS 2012a). Issues can include an “initiative, opportunity, resource management problem, threat to a resource, conflict in use, or a public concern.” Issues arise from many sources, including refuge staff, other Service programs, State agencies, other Federal agencies, our partners, neighbors, user groups, or Congress. One of the distinctions among the proposed management alternatives evaluated in the draft CCP/EA was how each addressed those issues.

From agency and public meetings and planning team discussions, we developed a list of issues, concerns, opportunities, and other items requiring a management decision. We placed them in two categories: key issues and issues outside the scope of this analysis.

- **Key issues**—Key issues are those the Service has the jurisdiction and authority to resolve. The key issues, together with refuge goals, form the basis for developing and comparing alternatives. The key issues are described in detail below.

The following summary provides a context for the issues that arose during the scoping process.

### Key Issues

We derived the following key issues from public and partner meetings and further team discussions.

#### *Biological Management*

For national wildlife refuges, the conservation of wildlife and habitats is the highest priority, and serves as the foundation for all that the Service does. Many refuges were established for a very specific purpose, such as protecting a particular species or habitat. Presquile NWR’s purpose is broader in its scope as an inviolate sanctuary for migratory birds. As such, consideration of management alternatives was made in light of bird conservation priorities and other management goals.

Protection and restoration of refuge habitat is an important issue addressed in this plan. The planning team received many opinions on specific actions or techniques to accomplish that endeavor. Some suggestions and actions fall outside Service jurisdiction. Some are best accomplished in partnership with other Federal or State agencies, or non-governmental organizations.

Specific questions asked regarding the topic of biological management include:

#### ***(1) How will the refuge respond to potential impacts of climate change on existing refuge habitats?***

Climate change and its corresponding effects on sea level rise, species migrations or range distributions, extreme shifts in temperature and precipitation, and invasive species introductions may potentially pose dramatic threats and alterations to the habitats encompassed within the refuge. The ability to adapt or address these ever-changing concerns requires a comprehensive understanding of the refuge’s landscape context, individual habitats, species utilization, and their resilience.

Presquile NWR is located at or near sea level and is subject to tidal hydrology across a large portion of the refuge. Being located near the transition between the coastal and inland plant communities as well as the upper extent of the James River's tidal range, the refuge is located in a transitional zone for many plant, fish, and wildlife species. Many of the refuge habitats have developed under the coastal conditions present over the past 10,000 years. Given the projections for shifts in mean temperature and precipitation for the region, new introductions or altered distributions of both native and nonnative species are possible results of climate change.

The refuge is also evaluating potential habitat changes caused by rising sea levels. We have analyzed the effect of sea level rise on refuge habitats through the use of a Sea Level Affecting Marshes Model (SLAMM) analysis originally completed in 2009. Its results are discussed in chapter 3 and how the refuge will respond to its implications is noted under goal 1 of the management plan discussed in chapter 4.

***(2) How will the refuge improve its biological integrity in light of landscape-level ecological concerns such as biological connectivity with other nearby habitats or impacts from air and noise pollution from surrounding industry?***

Fragmentation of both terrestrial and aquatic habitats can have adverse effects on many plant, fish, and wildlife species, such as reducing biodiversity, limiting genetic diversity, and increasing susceptibility to species invasion and other stressors. Agriculture, as well as commercial or residential development, isolates a patchwork of forest, wetland, and grassland habitats. Dams, dikes, and other water control structures fragment the available aquatic habitat in a similar manner. The refuge is a physical island, as well as a biological island, amidst a developing landscape.

As a result, few opportunities remain for improving biological connections on the refuge itself. Improving regional connectivity with nearby wildlife habitat corridors and promoting connectivity would likely benefit species that utilize the refuge. Most lands providing optimal connection to adjacent habitats are located on non-refuge lands and require extensive landowner or partner coordination. Even though connectivity is important to the protection and conservation of biodiversity found on refuge lands, there are limited opportunities within the jurisdiction of the Service outside of the refuge in surrounding lands and waters.

The refuge is also located in close proximity to several industrial and commercial areas along the James River. Four industrial plants are within 1 mile (1.6 km) of Presquile NWR. As described in chapter 3, several pollutants monitored in surrounding areas for human health and safety have repeatedly been recorded above the air quality standards set by either the EPA or Virginia Department of Environmental Quality (VDEQ). Since sources of air quality are generated outside of the refuge, the Service cannot directly control levels of emissions. As such, consideration of management alternatives will be made to ensure compliance with existing Federal, State, and local air quality regulations.

We envision utilizing a variety of partnerships with Federal, State, and non-governmental organizations to address these landscape-level concerns on the refuge. How the refuge will respond to connectivity needs is noted under goals 1 and 2 of the management plan discussed in chapter 4.

***(3) How will the refuge address erosion and sediment deposition issues on and adjacent to the refuge?***

Erosion along the Turkey Island Cutoff poses a threat to loss of land and associated resources at Presquile NWR. The Turkey Island Cutoff, completed

in 1934, allows more efficient transport of commercial shipping along the James River. However, erosion of the southern boundary of the refuge has resulted in large losses of land in recent decades. Hurricane Camille in 1969 also resulted in land loss. Based on a review of current and historic aerial photography, we have estimated that Presquile NWR has lost more than 11 acres of land since 1968.

Sediment deposition in other portions of the James River poses potential concerns related to waterfowl protection at the refuge. Sedimentation in the oxbow has resulted in the mean low water line moving into the former channel. Without dredging and other mitigation, this increased sedimentation could eventually result in a complete stop of water flow. Some concerns have been expressed that this sediment deposition may pose a threat to waterfowl habitat in the oxbow.

Addressing erosion to protect against further loss of land, as well as providing habitat for waterfowl, are primary concerns to refuge staff. How the refuge will respond to concerns related to tidal freshwater marsh conservation and restoration needs is noted under goals 2 and 5 discussed in chapter 4.



Cyrus Brame/USFWS

*Shoreline erosion*

**(4) *How will the refuge manage invasive, nonnative, and overabundant species?***

Invasive plant species, such as Johnsongrass and Canada thistle, threaten refuge habitats by displacing native plant and animal species, degrading natural communities, and reducing natural diversity and wildlife habitat values. They outcompete native species by dominating light, water, and nutrient resources, and are particularly menacing when they dominate and overtake native habitats.

There are additional concerns that other invasive species, such as exotic insects, fish, and other animals, should be considered and managed as well. Climate change estimates may also result in a shift of species distributions or conditions across the region that may allow introduction of additional species in the future.

Prioritization and management of invasive species should be put in context with other regional efforts to be most effective, but is compounded by limits on staff and resources available to implement treatments against invasive species.

How we respond to these concerns is noted under goals 1 and 2 discussed in chapter 4.

**(5) *What will the refuge do to manage the 223 acres of grassland habitat?***

The 223 acres of grassland habitat on the refuge today is known to have been farmed for over 300 years (Goode et al. 2009), which includes being farmed by the Service from 1953 to 2000. Since 2000, the farm fields have converted to grassland habitat through natural succession. This area provides a small amount of grassland habitat for migratory birds and other wildlife species that use open spaces. In a larger landscape context, this type of habitat is becoming less common as farming practices convert hay fields to row crops and other fields become developed as a part of residential areas. In addition, the patch size of the remaining grassland has been decreasing, which reduces the value to patch-size-dependent wildlife.

The succession of grassland habitats to shrubs and early successional tree species to mid-to-late successional tree species is a natural process that occurs in the absence of a disturbance that maintains or resets the successional stage. Over time, as the habitat changes, the types of wildlife utilizing the area change due to each individual species' needs and life cycle. Natural disturbances include invasive species infestations, disease, fire, and large weather events such as hurricanes or tornadoes. Habitat management activities such as mowing, herbicide application, and prescribed fire can emulate the natural disturbance process and restore or maintain a desired successional stage.

In many instances in natural areas across the country, including refuges, habitat management activities are effective at restoring missing disturbance processes. The location of Presquile NWR makes several management activities more difficult. Prescribed fire has not been shown to be an effective tool for the refuge due to changing weather conditions, the proximity of roads and industries downwind of prevailing wind directions, and logistical obstacles associated with getting prescribed fire equipment and staff to the refuge. A significant concern with prescribed fire is smoke management and avoiding negative impacts to local residents and industry. Conducting a prescribed burn that meets the habitat management objectives has been relatively unsuccessful or unpredictable. Mowing is another option for management; however, it requires equipment and labor resources to complete on a regular basis. Without active management, the grassland habitat of Presquile NWR would succeed toward early successional shrub and tree species.

There is concern that allowing the grassland habitat to convert to early successional tree species will negatively impact the wildlife species that are currently using it. There is value in this concern given the low abundance of this habitat on the larger landscape. Additionally, if the area succeeds to pioneer shrub and tree species, would the area be allowed to succeed to the later stages in the absence of a natural disturbance or would habitat management techniques be employed to reset succession to an early stage? Deciding how the current grassland habitat will be managed in the future will consider refuge resource limitations, benefits to wildlife on the landscape level, and maintaining or restoring natural functions of the refuge.

How we respond to these concerns is noted under goal 2 discussed in chapter 4.

*Public Use and Interpretation of Environmental and Cultural Resources*

Specific questions asked regarding the topic of cultural resources, environmental education, and public refuge use include:

**(1) *To what extent would the refuge interpret or educate the public about cultural resources, historical landscapes, and American Indian history and culture on or around the refuge?***

The area known today as Presquile NWR is, and was historically, an important location for Virginia Indians due to its location on the James River. The oldest evidence of American Indian presence at present day Presquile NWR dates to 3,000 B.C. Virginia Indian tribes are known to have been present when Europeans settled the peninsula in 1613.

Presquile NWR offers the opportunity to educate the public about the cultural resources and landscapes on the refuge. The refuge itself is a relatively undisturbed area with minimal modern structures and limited access. One structure, the Menenak Discovery Center, uses the Algonquin word for island in its name and provides interpretive information about American Indians. This landscape can help provide a living history landscape connecting visitors to the area's natural and cultural history. Present day Presquile NWR includes lands and waters that supported American Indians for centuries, as well as early European settlements. The recent creation of the Captain John Smith Chesapeake NHT is promoting the connection of cultural landscapes along the James River, including Presquile NWR. During the scoping period for this CCP, we received several inquiries from the public comments regarding the extent to which the refuge would educate and interpret the refuge's cultural history.

The refuge received comments during scoping emphasizing the value of the refuge area to American Indians. In particular, it has been recommended that we identify and communicate how natural resources would have been used by Virginia Indians, particularly the Appamattuck and Weyanock Tribes, when interpreting various natural resources. It was also emphasized that Presquile NWR provides an ideal place to demonstrate to the public how an appreciation of indigenous values regarding stewardship of land and wildlife relates to our current efforts in conservation and environmental stewardship.

How we respond to these concerns is noted under goal 3 discussed in chapter 4.

**(2) *What will the refuge do to improve its environmental education, interpretation, wildlife-dependent recreation, and compatible public uses?***

The isolated landscape of the refuge inherently limits public access and use. As a result of this, the refuge also offers unique opportunities for the visitors to experience the natural world. A small boat dock is the designated point of authorized access to the island for individuals and groups. The ability to move people to the refuge is limited due to the decommissioning of the cable ferry for public use. There is concern that the limited access to the refuge is limiting opportunities for environmental interpretation, wildlife-dependent recreation, and other compatible public uses. Management will consider opportunities to enhance public uses on the refuge by upgrading refuge infrastructure as necessary and by working with partners to achieve the refuge's goals for appropriate and compatible uses.

Participants in the refuge's annual deer hunt acquire a special permit. During public scoping, we received inquiries regarding the refuge's intent to offer turkey hunting.

How we respond to these concerns is noted under goal 4 and 5 discussed in chapter 4.

***(3) How does the refuge plan to accommodate an increase in visitors while maintaining protection of sensitive fish and wildlife resources?***

Currently, there is recognition that, as a society, Americans have become increasingly detached from nature due to changing lifestyles, past and current urban migrations, and shifts towards activities that reduce the amount of time individuals spend outside. Presquile NWR and other refuges can play an important role in providing opportunities for the public to reestablish their connection with nature.

During the public scoping period, we received comments noting concerns about the limited public access to this island refuge and concerns that expanded refuge access would negatively impact fish and wildlife resources sensitive to even minimal human disturbance, such as walking along a trail or paddling the waters on or around the refuge. Management and development of visitor services will need to balance providing opportunities to the public while not harming the refuge's natural resources.

How we respond to these concerns is noted under goals 4 and 5 discussed in chapter 4.

***(4) To what extent will the Service use partnerships with area agencies, businesses, and organizations to achieve the refuge's resource conservation and visitation goals?***

The physical location and role of the refuge in the larger landscape or regional context is strongly considered during the planning process for the refuge. However, there is concern that refuge management activities in several different areas including biological resource management, environmental education, and visitor services will be done independent of the needs and goals of area agencies, business, and organizations. Refuge management is driven by several Service policies and mandates (see chapter 1) along with the legislative acts used to create the refuge. Using these guidelines, management of the refuge will build on existing partnerships and explore additional opportunities in support of resource conservation and visitation at Presquile NWR and the surrounding area.

How we respond to these concerns is noted under goals 1 through 5 discussed in chapter 4.

***(5) At what levels does the Service plan to continue staffing and management of the refuge?***

Several existing or proposed management activities such as riparian restoration, visitor services, and maintenance of the existing and proposed refuge infrastructure require a level of staff and financial resources to complete. Presquile NWR is encompassed within the Eastern Virginia Rivers NWR Complex. The refuge complex shares a staff of eight full-time employees; however, no single staff person is solely dedicated to Presquile NWR.

There is concern that proposed management activities will not have the appropriate staffing levels or financial resources to be fully used. Mobilizing local volunteer groups, emphasizing partnerships, or recruiting summer college students interested in performing research on the biological resources of the refuge may provide opportunities to increase the capacity of the refuge to achieve management activities.

How we respond to these concerns is noted under goals 4 and 5 discussed in chapter 4.

## Chapter 3



*Tidal swamp forest view from Little Creek*

# Existing Environment

- 3.1 Introduction
- 3.2 The Physical Landscape
- 3.3 The Cultural Landscape Setting and Land Use History
- 3.4 Current Climate and Potential Effects of Climate Change
- 3.5 Air Quality
- 3.6 Hydrology and Water Quality
- 3.7 Noise and Soundscapes
- 3.8 Socioeconomic Landscape
- 3.9 Special Status Areas
- 3.10 Refuge Administration
- 3.11 Refuge Natural Resources
- 3.12 Cultural Resources
- 3.13 Public Uses



## 3.1 Introduction

This chapter describes the current and historic physical, biological, and socioeconomic landscape and resources of Presquile NWR. We first describe the regional landscape, including its historical and contemporary influences, and then we describe the refuge and its resources.

## 3.2 The Physical Landscape

### 3.2.1 Watershed Context

The 1,329-acre refuge is part of the greater Chesapeake Bay watershed, a drainage basin of 64,000 square miles that encompasses parts of the States of Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia, and the District of Columbia. Waters from this expansive area flow into the Chesapeake Bay, the Nation's largest estuary. The watershed contains an array of habitat types including:

- Mixed hardwood forests, typical of the Appalachian Mountains
- Grasslands and agricultural fields
- Lakes, rivers, and streams
- Wetlands and shallow waters
- Open water in tidal rivers and the estuary

This diversity of habitat types in the watershed supports more than 2,700 plants and animal species, including Service trust resources such as endangered and threatened species, migratory birds, and migratory fish (USFWS 2011).

The James River is one of several major tributaries of the Chesapeake Bay watershed and is the geographic feature that defines the boundaries of Presquile NWR. The refuge is actually an island within the river. This river is formed by the confluence of the Jackson and Cowpasture Rivers and flows 340 miles from its headwaters in the mountains of Bath and Highland Counties, Virginia, to the Chesapeake Bay. While the entire James River watershed comprises about 6.5 million acres, the refuge occurs along its middle reaches at River Mile 80, upstream of the Chesapeake Bay.

### 3.2.2 Geologic Development

Presquile NWR lies within the Virginia Coastal Plain Physiographic Province of the Atlantic Coastal Plain, as delineated by U.S. Geological Survey (USGS). Physiographic provinces are broad-scale subdivisions based on terrain topography, rock type, and geologic structure and history. The Virginia Coastal Plain Physiographic Province consists of a series of terraces, or scarps, sloping downward toward the coast, with each terrace representing a former shoreline. It is the youngest physiographic province in the State and consists primarily of Holocene (11,700 years ago to present) and Pleistocene (2.6 million to 11,700 years ago) age sedimentary deposits of sand, clay, marl, and shell (USGS 1989). Its principle characteristics are a generally low topographic relief, extensive marshes, and tidally influenced rivers and creeks (USFWS 2007b).

The Virginia Coastal Plain Physiographic Province is separated on its western boundary from the Appalachian Piedmont Physiographic Province by the "Fall Line" which is a low, east-facing cliff that parallels the Atlantic coastline from New Jersey to the Carolinas. It separates hard Paleozoic (542 to 251 million years ago) metamorphic rocks of the Piedmont to the west from the softer, gently dipping Mesozoic (251 to 66 million years ago) and Tertiary (65 million to 2.6 million years ago) sedimentary rocks of the coastal plain. This erosional scarp, the site of many waterfalls, hosted flume- and water-wheel-powered industries in colonial times and helped determine the location of such major cities as Philadelphia, Baltimore, Washington, and Richmond. Richmond marks the approximate Fall Line on the James River (USFWS 2007b). The Virginia Natural Heritage Program (VNHP) further subdivides the coastal plain region into "northern," "southern," "inner," and "outer" Virginia coastal plain to account

for the rich variety and distinction of natural community types in the area. The refuge occurs within the southern coastal plain in the James River/Curles Creek subwatershed (JL 06) (VDEQ 2006).

### 3.3 The Cultural Landscape Setting and Land Use History

Known cultural resources from Presquile NWR date from the Late Archaic period (3,000 to 1,200 B.C.) through the 20th century. These resources contribute to further understanding of Virginia's history involving American Indian settlement and subsistence, initial exploration of the James River by Europeans beginning in 1607, plantation society, military history, and post-Civil War rural agriculture.

#### 3.3.1 Early American Indian and European Influences

Three archaeological sites at Presquile NWR are known to contain American Indian components dating to the Late Archaic through Woodland periods (3,000 B.C. through European contact in 1607). The Archaic period is identified by archaeologists as the period when more localized seasonal settlement and subsistence patterns replaced the broad seasonal migration patterns of the earlier Paleo-Indian period (9,500 to 8,000 B.C.). In Virginia, the transition from nomadic to permanent, year-round settlement also increased dramatically during the Archaic period, as evidenced through the presence of stone bowls and small subsurface features (Goode et al. 2009). The innovation of ceramic technology and the emergence of cultivated plants generally identify the transition to the Woodland time period. In Virginia, the Woodland period is also characterized by the large-scale exploitation of shellfish, often visible archaeologically through the presence of mounds of discarded shells (Goode et al. 2009). Pre-contact sites at Presquile NWR have yielded artifacts including fire-cracked rock, projectile points, and blades. At least one of the sites exhibits repeat occupation over time (Goode et al. 2009). The archaeological evidence at Presquile NWR indicates a strong American Indian presence spanning thousands of years prior to European contact and continuing into the contact period.



Cyrus Brame/USFWS

*Archaeological survey conducted in 2010*

Extensive American Indian settlements in the vicinity of Presquile NWR are well-documented in the colonial period. Historically, the Weyanock and the Appamattuck Tribes resided along the portion of the river near the current Presquile NWR (Goode et al. 2009). While the initial European colonization occurred at Jamestown Island on the James River in 1608, other settlements in the area soon followed. The English began expanding beyond Jamestown in 1609, taking by force the territories of the Kecoughtan, Paspahegh, Warraskoyack, Quiyoughcohanock, and Arrohatock Tribes (Goode et al. 2009). In 1613, acting governor Sir Thomas Dale seized the Appamattuck town, seat of Queen Oppussoquionuske, located at the confluence of the James and Appomattox Rivers. This town included present-day Presquile NWR.

Sir Thomas Dale established the Bermuda Hundred settlement and, by 1619, the population at Bermuda Hundred had risen to 119 people. By the middle 17th century, it had become a commercial center, serving as the primary inland port on the James River (Goode et al. 2009).

By the mid-1700s, Virginia was well-settled along the James River. Plantations were built to support tobacco production from the coast up to Richmond, Virginia. By 1751, a plantation was located on the peninsula near Bermuda Hundred, in the present day Presquile NWR (Goode et al. 2009). From 1785 to 1800, Bermuda Hundred was the official port of entry on the James River, boosting its waterfront development. Despite the loss of the customs house at the

turn of the century, Bermuda Hundred continued to be an important regional port well into the 19th century.

Due to its location near two major rivers, the land in and around Presquile NWR was an important site during the Civil War. In 1864, the Union Army landed at Bermuda Hundred with the intention of destroying the Confederate supply line between Richmond and Petersburg. Although the Union Army lost the subsequent battle upstream at Swift Creek, they maintained a presence at Bermuda Hundred until 1865 (Goode et al. 2009). While the main Union occupation was located several miles west of Presquile NWR, the wharves at Bermuda Hundred were extensively used by the Union Army. It is likely that the Watkins Farm, located within Presquile NWR, was either occupied or visited by Union troops (Goode et al. 2009). It is also likely that the Union Army guarded the James River shoreline along the current Presquile NWR because the Confederates controlled the opposite shore of the river (Goode et al. 2009). In addition, the Union used the land within Presquile NWR, then known as Turkey Bend, as a key observation point for river traffic coming south from Richmond, Virginia (Goode et al. 2009). Some local residents still refer to the island as Turkey Island, a name given by Captain Christopher Newport in the early 1600s.

After the Civil War, agriculture and timber production became the primary economies for the communities in and around Presquile NWR. In the 1880s, the Farmville, Powhatan, Tidewater, and Western Railroads were constructed, connecting the port at Bermuda Hundred to cities across Virginia (Goode et al. 2009). The rail line was eventually closed in 1917, due largely to the decline of coal mining, and the associated decline in freight. The demise of the railway system led to the slow and steady decline of Bermuda Hundred through the latter half of the 20th century (Goode et al. 2009).

For the majority of its history, Presquile NWR existed as a peninsula connected to the town of Bermuda Hundred. The James River formed an oxbow bend, encompassing approximately 6 miles (9.6 kilometer) of shoreline surrounding Presquile NWR. In an effort to reduce travel time for river traffic, the U.S. Army Corps of Engineers (USACE) cut a navigational channel through the peninsula in 1934. This cut, the Turkey Island Cutoff, made Presquile NWR a true island (USFWS 2004a).

### 3.3.2 Historic Occupation of Presquile NWR over the Past 300 Years

During the mid-17th century, land outside the village of Bermuda Hundred was held in small and medium-sized plantations (Goode et al. 2009). William Randolph, ancestor to prominent Virginians, such as Thomas Jefferson, John Marshall, and Robert E. Lee, purchased the Presquile peninsula (present-day Presquile NWR) around 1660, although his family plantation was located on the north side of the river and not within the current refuge boundaries (Goode et al. 2009). David Meade Randolph, great-great grandson of William Randolph, lived on Presquile NWR by 1790. He is the first documented occupant of a house located within the refuge that was demolished in 1965 (Goode et al. 2009). The Presquile property was sold by the Randolph family in 1801, and successive ownership changed hands through four different families between 1801 and 1902 when it was purchased by Mr. A.D. Williams (Goode et al. 2009).

Mr. Williams maintained a dairy farm and country estate on the island, with at least 5 separate houses and over 30 farm and estate-related structures. In his will, Mr. Williams bequeathed 1,329 acres of lands and waters to the U.S. Department of the Interior for the purpose of “the preservation, protection, replenishment, and propagation of and for increasing the supply of game birds, game animals, fish and other wildlife in the State of Virginia.” The Service determined that the property was of sufficient importance to warrant administration as a national wildlife refuge and established Presquile NWR on March 7, 1953.

The Service used the much-modified, 18th-century Randolph family house as a staff residence until it was demolished in 1965. Although the house was destroyed and other associated outbuildings no longer exist, the historic plantation locality is listed as an archaeological and architectural site by the Virginia Department of



Meghan Carfoi/USFWS

Historic Resources. Portions of the main house foundations are visible today and it is probable that the foundations of various outbuildings remain, in addition to associated archaeological resources (Goode et al. 2009).

*Gravestone at the Presquile Cemetery*

### 3.4 Current Climate and Potential Effects of Climate Change

#### 3.4.1 General Climate Description

The climate of the middle James River system is humid subtropical as determined by latitude, topography, prevailing westerly winds, and the influence of the Atlantic Ocean. Prevailing winds are westerly with highest wind speeds in the spring (USFWS 2007b). Average annual temperature fluctuations typically range from a high of approximately 71 °F to a low of approximately 48 °F. The average monthly temperature ranges from 37 °F in January to 48 °F in July. Precipitation averages 44 inches annually, with peak rainfall occurring in the summer (see table 3.1). Local annual average relative humidity is 68 percent. Prevailing winds in the spring and summer are from the south-southeast, while those in the fall and winter are from the north-northwest. Local average annual wind speed is 4 miles per hour (<http://www.wunderground.com/history/airport/KPTB>; accessed May 2012). Data available for Hopewell, Virginia (Station 444101) indicates the growing season to be approximately 185 days, and the average annual snowfall is 7.9 inches (SERCC 2012).

**Table 3.1. Monthly Average Temperature and Precipitation for the Refuge Vicinity**

Month	Average Temperature (in degrees Fahrenheit)	Average Precipitation (in inches)
January	37	1.65
February	48	1.01
March	53	11.40
April	65	1.49
May	72	4.79
June	83	1.89

Month	Average Temperature (in degrees Fahrenheit)	Average Precipitation (in inches)
July	84	2.13
August	81	5.79
September	77	6.96
October	64	4.01
November	52	1.32
December	35	5.22
<b>Annual average/total</b>	63 (annual average)	47.66 (annual total)

### 3.4.2 Global Climate Change

Global climate change is a significant concern to the Service and to its partners in the conservation community. Tidal marshes are among the most susceptible ecosystems to climate change, especially accelerated sea level rise. The International Panel on Climate Change (IPCC) Special Report on Emissions Scenarios suggested that global sea level would increase by approximately 12 to 40 inches (30 to 100 centimeters) by 2100. Other scientists suggest that this range may be too conservative and that a more likely range could be 20 to 80 inches (50 to 200 centimeters) by 2100 (Clough et al. 2009). Spring and summer temperatures will rise with earlier spring snowmelt, wildfires will increase in number and be larger and of longer duration, and tropical storms will increase in frequency and intensity (Scott et al. 2008).

## 3.5 Air Quality

The EPA collects emissions data on three common air pollutants that can negatively impact human health and the environment: carbon monoxide, sulfur dioxide, and particulate matter. The EPA also collects data on three major promoters of these air pollutants: volatile organic compounds, nitrogen oxides, and ammonia. These data are summarized in the Air Quality System database, EPA's repository of criteria air pollutant monitoring data. This database reports the number of days when air quality was good, moderate, or unhealthy for sensitive groups, by stationed county (counties with air quality monitoring stations). Table 3.2 presents the air quality data for the counties near Presquile NWR.

**Table 3.2. Air Quality Data from the EPA's Air Quality System Database for Three Counties near Presquile NWR, 2006.**

County	Percentage of Days in 2006 when Air Quality was Good, Moderate, or Unhealthy		
	Good	Moderate	Unhealthy for Sensitive Groups
Charles City County	84 percent	15 percent	Less than 1 percent
Chesterfield County	81 percent	18 percent	Less than 1 percent
Henrico County	65 percent	34 percent	1 percent

Source: [www.epa.gov/airdata](http://www.epa.gov/airdata) (accessed May 2012).

VDEQ monitors levels of ozone and particle pollution from several stations in Virginia. The Air Quality Index is a measurement of air quality that is calculated from measurements of these pollutants over several hours. A higher rating indicates a higher level of air pollution and consequently, a greater potential for health risk. According to VDEQ's Division of Air Program Coordination,

Chesterfield County lies within an ozone maintenance and emission control area for oxides of nitrogen and volatile organic compounds.

Presquile NWR is located in the Richmond-Petersburg Metropolitan Statistical Area (<http://www.epa.gov/ozonedesignations/2008standards/rec/region3R.htm>; accessed May 2012). Air quality in the Richmond-Petersburg Metropolitan Statistical Area was good for the majority of days during 2010 (EPA 2011a). There are two air quality monitoring stations within a 5-mile radius of Presquile NWR (EPA 2011b). One station is located 0.43 miles east of Presquile NWR at the Shirley Plantation (Site 51-036-0002). The other station is located approximately 4 miles south of Presquile NWR, at 1000 Winston Churchill Drive in Hopewell (Site 51-670-0010). Sulfur dioxide, nitrogen dioxide, particulate matter (0 to 2.5 micrometers), and ozone are currently being monitored at Shirley Plantation; particulate matter (0 to 10 micrometers) is currently monitored at the Hopewell site. Ground-level ozone exceeded the air quality standard on 4 days in 2012 (July 6, 7, 15 and September 23; range: 78 to 84 parts per million (ppm)).

The city of Hopewell, Virginia, is heavily industrialized. Four industrial plants are within 1 mile of Presquile NWR. Occasionally, when wind and other factors are unfavorable, haze and odor from these plants are quite evident (USFWS 2004a). VDEQ collected data on the long-term cancer and non-cancer risk exposure to the air quality in the Hopewell area using three monitoring stations for 3 years (McMurray and Anthony 2010). All three sites exceeded the benchmark estimated risk probability, which is the chance that a person living near a source would have health risks if exposed to a maximum pollutant concentration for 70 years (EPA 1989). The most important carcinogenic chemicals detected were carbon tetrachloride and formaldehyde. A suite of non-carcinogenic chemicals were also measured to determine the risk that a person living near the area would develop some negative effect to their health due to exposure to these chemical concentrations. All three sites had a risk level that exceeded the probability of a person developing non-carcinogenic health effects; however, when compared to the rest of the State of Virginia, the Hopewell area is very similar to other urban areas. The non-carcinogenic compound of greatest concern is acrolein.

Real-time air quality information for the sites in the refuge vicinity are available on VDEQ's Web site at: [http://vadeq.ipsmtx.com/cgi-bin/aqi\\_map.pl?metro01\\_aqi.png](http://vadeq.ipsmtx.com/cgi-bin/aqi_map.pl?metro01_aqi.png) (accessed May 2012).

## **3.6 Hydrology and Water Quality**

### **3.6.1 Summary of the General Condition of the James River Basin**

The entire James River Basin covers 10,265 square miles or approximately 24 percent of Virginia's total area. The James River Basin is the largest of Virginia's Chesapeake Bay watersheds. The James River Basin is divided into eight USGS hydrologic units (HUCs) as follows: Upper James, Maury, Upper Middle James, Rivanna, Lower Middle James, Lower James, Appomattox, and Elizabeth. The 8 HUCs are further divided into 109 waterbodies and 298 sixth-order subwatersheds. Presquile NWR is located within the Lower James River HUC. The largest tributary to the James River near the refuge is the Appomattox River, approximately 2.5 miles to the south (VDEQ 2010).

The Fall Zone is a 3-mile stretch of river running through Richmond where the river descends 84 feet as it flows from the Piedmont Physiographic Province to the Coastal Plain Physiographic Province (VDEQ 2010). The tidal influence extends to the Fall Line east of Richmond and up many of the creeks in the Lower James River HUC. Formerly, there were five dams along the James River in the Richmond area, but no dams remain there or elsewhere further downstream. However, significant remnants or partial dams remain at locations in the Fall Zone.

Cyrus Brame/USFWS



*Ferrying trees out to the refuge to be planted.*

More than 65 percent of the James River Basin is forested, while 19 percent is cropland and pasture. Approximately 12 percent is considered urban. In 2006, the population of the James River Basin was approximately 2,092,278. This population was concentrated in two metropolitan areas: Tidewater, with over 1 million people, and the Greater Richmond-Petersburg area with over 650,000 (VDEQ 2010).

According to the James River Association's (JRA) State of the James River 2009 report, the overall river health score for the James River has increased 1 percent since 2007; however, troubling signs indicate the need to strengthen river restoration efforts. Three of the critical habitats—underwater grasses, riparian forests, and tidal water—included in the report have improved in recent years. Some of this is due to reduced pollution levels entering the river in recent years that have

helped improve water quality and habitat conditions. However, some of the reduced pollution levels are attributed to lower rainfall in recent years resulting in less polluted runoff. When the true effectiveness of pollution control efforts is measured, removing the influence of annual weather variations, progress in reducing harmful pollutants to the James River has stagnated and in some cases reversed. Long-term, adjusted average of pollution discharges to the James River has leveled off from significant improvements achieved early in the river cleanup effort. In addition, the slowing of actual pollution controls, despite increased investment in wastewater and agricultural programs, shows that other sources of pollution, such as new and existing development, must be addressed. Currently, 61 percent of the James River's streams are categorized as being in good or excellent condition. However, many streams are still under moderate to severe stress. The tidal James River continues to have problems with excessive algae growth and water clarity remains very poor, meeting the State standard only 6 percent of the time. The most pervasive forms of pollution in the James River are sediments, phosphorus, nitrogen, and bacteria (JRA 2009).

### 3.6.2 Influences on Ground and Surface Water Quality

Near-surface sources of contamination have the potential to impact water supplies in the upper 100 feet of the coastal plain's shallow regional aquifer, the aquifer from which drinking water is withdrawn for refuge operations ([http://pubs.usgs.gov/hwri/wri034278/hwir03\\_4278.pdf](http://pubs.usgs.gov/hwri/wri034278/hwir03_4278.pdf); accessed May 2012).

#### Chemical Pollution

Ten EPA Superfund sites are located in the Lower James River watershed, including five private sites and five Federal facilities. In addition, four EPA facilities of interest are located on Bermuda Hundred across the James River from Presquile NWR. The facilities report identifies records of environmental interests, Standard Industrial Classification Codes, National Industry Classification System Codes, and basic information (address, ownership, contacts, etc.) (<http://www.epa.gov/enviro/html/fii/ez.html>; accessed May 2012).

Four superfund sites are currently listed within the four-county area surrounding Presquile NWR, although none of the sites are near the refuge. Tributaries to the James River that may have had discharges of chemicals or contaminants include North Run Creek and No Name Creek.

Lastly, there are four Resource Conservation and Recovery Act sites (solid and hazardous wastes sites) in the general vicinity of the refuge: three in the city of Hopewell and one approximately 0.9 mile southwest of the refuge on Bermuda Hundred Road. None of these sites appear to pose a threat to waters surrounding or within the refuge.

No voluntary remediation program sites are known to occur within 3 miles of Presquile NWR (VDEQ 2012a, VDEQ 2012b).

### **Sediments**

Erosion from upland land surfaces and erosion of stream corridors (banks and channels) are the two most important sources of sediment coming from the James River watershed. Although erosion is a natural process, it may have increased significantly over the past few centuries because of human impact. Major sources of sedimentation and erosion include barren construction sites and plowed farm fields. In addition, impervious surfaces increase the volume and velocity of stormwater runoff causing stream bank erosion. For the entire Chesapeake Bay region, river basins with the highest percentage of agricultural land use have the highest annual sediment yields, and basins with the highest percentage of forest cover have the lowest annual sediment yields. Urbanization and development can more than double the natural background sediment yield, with the highest increase in sediment yield occurring during early development stages (USFWS 2007b).

During the 18th and 19th centuries, nearly 70 to 80 percent of the original forest cover was cleared, which increased erosion rates in the watershed. Although reforestation followed 20th century farm abandonment, high erosion rates continue. This may be attributed to development and remobilization of deposits of previously eroded material. Furthermore, much of the sediment eroded from cleared land during colonial times may still be stored in upland areas, stream corridors, channels, and tributaries. The proportion of this stored sediment that has actually reached Chesapeake Bay is unknown, but this “legacy” sediment will ultimately make its way to the bay. Such large quantities of stored sediment means that future improvements in water clarity may take years to decades following implementation of land-use changes in the watershed. A 2003 USGS report describes the relative concentrations of total suspended solids in Chesapeake Bay and tributaries to the bay (USGS 2003). Watershedwide, the nonpoint source reductions call for best management practices to be installed and maintained on 92 percent of all available agricultural lands, 85 percent of all mixed open lands, and 74 percent on all urban lands. According to VDEQ, the best management practices for reducing nonpoint source pollution are to refocus available tools, steer new resources to Virginia’s strongest nonpoint source control programs, and push them to maximize reductions across the landscape (VDEQ 2010b).

### **3.6.3 Long-term Trends and Status of Surface Water Quality for the James River (2003 to 2010)**

A recent water quality summary of the Chesapeake Bay and its tributaries by VDEQ (2010) describes the trends and status of water quality and living resource conditions from January 1, 2003, through December 31, 2008. More detailed information is also available on VDEQ’s Web site at: <http://www.deq.state.va.us/Programs/Water/WaterQualityInformationTMDLs/WaterQualityMonitoring.aspx> (accessed June 2012). VDEQ monitored 38 fixed stations on the Rappahannock, York, and James Rivers. State water quality standards define the water quality needed to support each of the six designated uses for surface waters in Virginia: aquatic life, fish consumption, public water supplies, recreation, shellfishing, and wildlife. If a waterbody contains more pollutants than allowed by the water quality standards, it will not support one or more of its designated uses. Such waters are considered to have “impaired” water quality.

VDEQ’s Quality Assurance Project Plan describes field sampling procedures for water quality between July 1, 2009, and June 30, 2010. This plan conducted water quality sampling at 32 stations within the mainstem Chesapeake Bay and the Elizabeth River. Parameters sampled at each station include temperature, pH, salinity, specific conductance, dissolved oxygen silicate (filtered), particulate carbon, total suspended solids, fixed suspended solids, chlorophyll a and phaeophytin (report at all wavelengths), particulate nitrogen and total dissolved



nitrogen, nitrate and ammonia (filtered), particulate phosphorus, total dissolved phosphorus, dissolved orthophosphate, and dissolved organic carbon-surface samples. In addition, phytoplankton, picoplankton, and primary productivity samples are collected at each station.

The abiotic measures used for water quality included total suspended solids, nitrogen and phosphorus load, chlorophyll a, temperature, salinity, and dissolved oxygen. The biotic parameters of quality included the phytoplankton community (floating organisms that can do photosynthesis for energy); the benthic community (organisms that dwell or feed on the bottom—the benthic index of biotic integrity is used to measure overall quality and identification of impaired waters); abundance/biomass ratios as a measure of pollution due to organic enrichment; and submerged aquatic vegetation. USGS sampling stations were placed above the Fall Line along the James River in Cartersville and above the Fall Line along the Appomattox River about 2.5 miles south of Presquile NWR. Living resource monitoring stations were placed along the James River downstream of the Fall Line, with a complete monitoring station placed in a tidal freshwater zone near Hopewell (TF5.5) some 3 miles south (downstream) of the refuge, and a plankton monitoring station at the mouth of the James River (LE5.5). The zone of most relevance to Presquile NWR is the tidal freshwater zone (VDEQ 2005).

Based on estimates provided by VDEQ, total point and nonpoint source loadings of nitrogen to the James River are approximately 17,103,000 kilograms per year with nonpoint loadings accounting for nearly 57 percent. Application of best management practices are estimated to have resulted in a 9 percent reduction of nonpoint source loadings and a 31 percent reduction in point source loadings of total nitrogen from 1985 to 2004. Total point and nonpoint source loadings of phosphorus were approximately 2,251,000 kilograms per year in 2004 with nonpoint sources accounting for almost 70 percent of the total load. From 1985 through 2004, best management practices reduced nonpoint source loads by an estimated 15 percent while point source loads dropped by 61 percent, probably as a result of the phosphate ban. Approximately 1,014,000 metric tons per year of sediment enter the tidal James River due to nonpoint source runoff. As stated previously, application of best management practices resulted in a 12 percent reduction in sediments from 1985 to 2004 (VDEQ 2005).

Although phytoplankton composition in the James River is represented by favorable dominance and abundance levels of diatoms, chlorophytes, and cryptophytes, there are significant signs of degradation. Status of most phytoplankton metrics was either poor or fair in the James River while status of primary productivity was poor at station TF5.5 near Hopewell and fair at station LE5.5 in the James River Mouth segment (VDEQ 2005).

The benthic community met water quality goals at most stations in the main stem of the James River except station LE 5.2 in the Lower James River (near mouth of the Pagan River) and at station TF 5.5 (near Hopewell, downstream of the refuge) (VDEQ 2005).

The widespread distribution of the water clarity problems in the James River makes identification of its sources difficult. Water clarity can be related to sediment loadings from nonpoint source runoff, shoreline erosion or marsh erosion, phytoplankton densities, sediment re-suspension, concentrations of dissolved organic matter, or a combination of these factors. Each of these factors could be influenced directly or indirectly by point and nonpoint source runoff of nutrients or sediments. Additional best management practices for erosion control could help to reduce sediment loadings to the James River while reductions in point source nutrients could help to reduce phytoplankton concentrations in the James River (VDEQ 2005).

Although the region experienced a dry period from 1999 through 2002, there were no significant long-term trends in freshwater flow in either the James River or Appomattox River (VDEQ 2005).

**3.6.4 State-Impaired Waters in the James River from VDEQ Report Impaired Waters (2010)**

In November 2010, VDEQ released the 305(b)/303(d) Water Quality Assessment Integrated Reports. These reports provide a summary of the water quality conditions in Virginia from January 1, 2003, through December 31, 2008. The report combines both the 305(b) Water Quality Assessment and the 303(d) Report on Impaired Waters for each river basin. These reports are compiled by the VDEQ with the assistance of the Virginia Department of Conservation and Recreation (VDCR), and are submitted to EPA and Congress to satisfy the Federal reporting requirements under Section 305(b) of the Clean Water Act and the Virginia Water Quality Monitoring, Information and Restoration Act § 62.1-44 19:4 through 62.1-44-19.8 of the Code of Virginia.

The report on impaired waters in the State describes segments of streams, lakes, and estuaries that violate water quality standards and details the pollutant responsible for these violations, as well as the cause and source of the pollutant, if known. Most impairments to water quality in the James River watershed come from *Escherichia coli* (*E. coli*), which is primarily related to agriculture practices, but is also a result of urban runoff, leaking sanitary sewers, urban storm sewers, and failing septic tanks. Domestic animals and wildlife can also be significant contributing sources (VDEQ 2010).

Within the entire James River Basin (i.e., the main stem and tributaries), the impairment by designated use has been determined by the VDEQ, and is summarized in table 3.3. Parameters or designated uses of impairment that were assessed within the watershed include aquatic life, fish consumption, public water supply, recreation, and wildlife and are expressed in “river miles” (VDEQ 2010). The EPA-approved total maximum daily load document for James River, Turkey Island Creek, and Fourmile Creek listed impairment for *E. coli* (VDEQ 2010, EPA 2010).

**Table 3.3. James River Basin Impairment by Designated Use**

	Number of River Miles in James River Basin				
	Aquatic Life	Fish Consumption	Public Water Supply	Recreation	Wildlife
Total Number of River Miles Assessed	4,078	1,960	257	3,293	3,395
Number of River Miles that Fully Supported the Designated Use	3,177	1,698	257	1,517	3,389
Number of River Miles that have Total Impairment for the Designated Use	902	262	0	1,776	6
Number of River Miles that have a Naturally Impairment for the Designated Use	148	0	0	0	0
Number of River Miles that had Insufficient Data	226	43	0	166	0

### 3.6.5 Submerged Aquatic Vegetation as an Indicator of Water Quality

Submerged aquatic vegetation (SAV) is a critically important component of the aquatic environment in the Chesapeake Bay, and its presence and healthiness are indicators of good water quality. SAV is important in marine environments because it serves as a major food source for wildlife, provides refuge for juvenile crabs and fish, stabilizes sediments preventing shoreline erosion and excessive suspended materials in the water column, and produces oxygen in the water column. SAV can only thrive in shallow depths where light reaches the benthic zone (i.e., bottom of the waterbody). The rooted aquatic beds provide shelter and food for numerous aquatic invertebrates, and blue crabs need their protective cover during their molt. A great number of waterfowl and aquatic mammals (e.g., muskrats) feed on SAV (USFWS 2007b).

SAV acreage has reached its highest levels in 30 years and now covers 40 percent of the goal set for the James River by the State. However, while underwater grasses are thriving in many of the tidal tributaries to the James River, as well as above the falls, there are still no underwater grass beds anywhere on the mainstem of the James River from Richmond to the James River Bridge in Newport News due to poor water clarity (JRA 2009). Interactive mapping for current and historical SAV monitoring illustrates that the James River adjacent to Presquile NWR has not supported SAV at any time between the first monitoring on record in 1971 through the 2009 monitoring (VIMS 2011).

A survey of water quality and living resource conditions in Mid-Atlantic estuaries indicated that the SAV habitat requirements were not met in 68 percent of the tidal portion of the James River (VDEQ 2005). SAV habitat requirements for nutrients, where applicable, were either borderline or not met with the exception of surface dissolved inorganic phosphorus in the Chickahominy River. Surface chlorophyll passed the SAV habitat criterion in all segments except the Appomattox River where it was borderline. Surface total suspended solids status was either borderline or failed to meet the SAV requirement in all segments except the James River segment downstream of the refuge and the mouth of the James River, where the criterion was met. Secchi depth either failed to meet the SAV habitat requirement or was borderline in all segments (VDEQ 2005).

The Chesapeake Bay Program committee established a goal to restore 3,483 acres of SAV within the James River Basin portion of the Chesapeake Bay watershed. Of this amount, 1,600 acres are proposed for restoration within the Upper James River watershed, which includes the vicinity of Presquile NWR (Murphy 2003).

### 3.6.6 General Water Quality Conditions in the Vicinity of Presquile NWR

Tidal waters of the James River, with average daily amplitudes of 3 feet, surround Presquile NWR. Rain, wind, or full moon tides can cause the river to fluctuate several feet from normal. In the area of the refuge, the James River is slightly brackish, with salinities ranging from a high of about 25 ppm in the summer to a low of 10 ppm in the winter (USFWS 2004a).

*View of the James River*



Bill Wood

Site-specific water quality information has been provided by JRA (Frederickson personal communication 2007). JRA recorded data on dissolved oxygen and pH levels at the entrance to the Turkey Island Cutoff for the period May 9, 2006, through October 3, 2007. Dissolved oxygen levels ranged from a low of 4.5 ppm to a high of 13 ppm, with an average of 8.6 ppm. When oxygen levels drop below 4 ppm, aquatic life is put under stress. Oxygen depletion is a major source of fish kills. The pH levels ranged from a low of 7.2 to a high of 8.7, with an average of 7.7.

One groundwater well is located in the public use area at Presquile NWR. Refuge facilities supply water to kitchen sinks, as well as restroom sinks, toilets, and showers in the environmental education center. An October 2011 investigation was conducted to determine the construction and integrity of the well, test the capacity of the well and pumping equipment, and collect a series of water samples to determine if the water is potable (i.e., safe for drinking). The well casing showed no signs of failure or surface water infiltration. Water sample tests determined that the well water is suitable for a domestic drinking supply by EPA standards.

Following this investigation, maintenance of the well was completed during March to April 2012 to clean the well casing, replace the failed bladder tank, install a weatherproof, insulated cover on the well head and equipment, and install sediment and carbon filters to contain sand and improve taste. The Service requires that wells be tested for total bacteria quarterly and for nitrates, nitrites, lead, and copper annually (Guiel personal communication 2011).

### **3.7 Noise and Soundscapes**

Noise has the potential to impact wildlife populations and the human experience on the refuge. The landscape surrounding Presquile NWR is comprised of the Curles Neck area to the west, which is a complex of existing marsh, managed ponds, and agriculture. Currently this area is being managed as a private hunt club. Agriculture and forestry make up the northern to southeastern portions of the adjacent lands. Industry is adjacent to the refuge across the James River along the southwestern border. The island setting of the refuge results in no roads intersecting the refuge. The nearest road, New Market Road, is approximately 0.6 miles to the north. I-295, the nearest interstate, is approximately 3.7 miles to the west of the refuge while State Highway 10, another heavily traveled road, is approximately 2.8 miles to the south. The James River is used for recreational boating and barge traffic carrying materials up and down the river.

The major human activities that contribute to the soundscape of Presquile NWR include boat traffic (both recreational and barges), industry to the southwest, hunting in the areas adjacent to the refuge boundaries during the waterfowl season in the fall, and refuge visitors. In all likelihood, these human activities have minimal impact to wildlife resources of Presquile NWR because of the island's physical isolation from large or continuous noise impacts. Also, overall, the lack of major sound disturbance on the refuge creates a naturalistic soundscape.

Species that occupy the interior of the refuge are likely buffered from any human sound sources that would have a negative impact on their lifecycle. The refuge has a limited trail system, which helps to minimize disturbance from visitors on the refuge. We will consider the impacts of sounds on wildlife when planning any changes to refuge management or additional recreational activities that increase access to the refuge's interior.

## 3.8 Socioeconomic Landscape

### 3.8.1 Regional Socioeconomic Setting

#### Regional Demographics

According to the U.S. Census Bureau, Presquile NWR is located in the Richmond, Virginia, Metropolitan Statistical Area. This area includes Chesterfield County, Prince George County, and the cities of Hopewell, Petersburg, and Richmond. The city of Hopewell is located south of the refuge, while the city of Richmond (the largest in Virginia) is located to the northwest. Tables 3.4 and 3.5 describe the general regional demographics.



Cyrus Brame/USFWS

Earth Day

**Table 3.4. Regional Population Demographics, 2010.**

	Population	Population Density (people per square mile)	Median Age	Population Change Between 2000 and 2010
<b>State of Virginia</b>	8,001,024	203	37.5	+ 13.0 percent
<b>City of Richmond</b>	204,214	3,404	31.3	+ 3.2 percent
<b>City of Hopewell</b>	22,591	2,259	36.5	+ 1.1 percent
<b>Chesterfield County</b>	316,236	748	37.6	+ 21.7 percent
<b>Charles City County</b>	7,256	40	46.6	+ 4.8 percent
<b>Henrico County</b>	306,935	1,257	37.5	+ 17.0 percent

(U.S. Census Bureau 2012; Henrico County 2012)

In creating table 3.5, we used the following definitions:

- Minority population includes persons who identified themselves and members in their households as members of the following groups:
  - \* One Race: American Indian and Alaska Native; Asian; Black or African American; Hispanic; Native Hawaiian and Other Pacific Islander; White; or some other race.
  - \* Two or More Races: Any combination of two or more of these race categories.
- Low-income population includes persons living below the poverty line.
- Linguistically isolated population includes persons who speak English less than “very well.”

Table 3.5. Regional Racial, Economic, and Linguistic Demographics, 2010.

	Majority Race Population	Minority Population <sup>1</sup>	Low-income Population <sup>2</sup>	Linguistically Isolated Population <sup>3</sup>
<b>State of Virginia</b>	White 70.4 percent	29.6 percent	10.3 ± 0.2 percent	2.7 ± 0.1 percent
<b>City of Richmond</b>	White 76.2 percent	23.8 percent	13.8 ± 0.1 percent	4.7 ± 0.1 percent
<b>City of Hopewell<sup>4</sup></b>	White 55.4 percent	44.6 percent	20.4 ± 2.9 percent	1.3 ± 1.0 percent
<b>Chesterfield County</b>	White 68.3 percent	31.7 percent	5.9 ± 0.6 percent	2.2 ± 0.2 percent
<b>Charles City County</b>	Black or African-American 48.4 percent	51.6 percent	9.7 ± 2.6 percent	0.0 ± 1.4 percent
<b>Henrico County</b>	White 59.2 percent	40.8 percent	9.6 ± 0.7 percent	2.9 ± 0.4 percent

<sup>1</sup> Minority population includes all races except the majority race, based on total population. Data source is the “QT-P4 Race, Combinations of Two Races, and Not Hispanic or Latino: 2010” tables (USCB 2010).

<sup>2</sup> Low-income population based on the percentage (and percent margin of error) of people whose income in the past 12 months is below the poverty level. Data source is the “DP03 Selected Economic Characteristics: 2008-2010 American Community Survey 5-Year Estimate” tables (USCB 2010).

<sup>3</sup> Linguistically isolated population based on the percentage (and percent margin of error) of households. Data source is the “S1602 2005-2009 American Community Survey 5-Year Estimates” tables (USCB 2010).

<sup>4</sup> Nearest incorporated city to Presquile NWR, not within any adjacent County.

### Land Use

Land use surrounding Presquile NWR currently includes industrial lands to the south and southwest in Chesterfield County; largely agricultural and forested lands to the east in Charles City County; and residential (single family, single family acreage and assisted living), commercial, light industrial, open space-recreation, public, semi-public, public service corporation and vacant to the north in Henrico County. Future land use projected for Chesterfield County southwest of the refuge retains industrial lands but also includes a proposed “Bermuda Hundred Park” to the west along the James River and another smaller park to the south along the river (<http://www.co.chesterfield.va.us/>; accessed May 2012). Within Charles City County to the east, lands are proposed as conservation areas (<http://co.charles-city.va.us/>; accessed May 2012), while in Henrico County, lands to the west and north are projected to remain environmental protection areas, open space/recreation, prime agriculture, rural residential, suburban residential 1, office, office/service, commercial concentration, government, and semi-public (<http://www.co.henrico.va.us/planning/>; accessed September 2012). It should be noted that future land use projections are subject to change over time.

### Employment

Virginia’s well-developed transportation system and central location along the Atlantic Coast provide access to major markets throughout the U.S. Nearly 50 percent of the Nation’s population and 50 percent of the manufacturing activity are within 500 miles of Richmond, the State capital. The Richmond Metropolitan Statistical Area is a leading manufacturing, finance, trade, and corporate headquarters center in Virginia (VEDP 2008).

In 2005, Forbes Magazine ranked the Richmond area as one of the best places for business and careers in the U.S., primarily due to its highly educated labor force and relatively low business codes. Other areas of the economy

that have developed recently include pharmaceuticals, insurance, advertising, biotechnology, education, tourism, health services, and semi-conductors. In 2009, travel and tourism was the fifth largest industry by nonfarm employment in Virginia, with travelers spending \$17.7 billion (VATC 2010). Visitor centers that promote local tourism occur in Henrico County and in the cities of Richmond, Petersburg, and Hopewell.

Chesterfield County is a developing urban and suburban county that includes the southeast metro Richmond area. The largest employment category in Chesterfield County is retail trade, while healthcare and social assistance and education services rank second and third, respectively. Large manufacturing industries include plants of E.I. du Pont de Nemours & Company, Honeywell, Inc., and Alstom Power, Inc. (<http://www.chesterfieldbusiness.com>; accessed May 2012). Commercial farming is a secondary economic factor in the county. The chief crops are forage (e.g., hay), soybeans, poultry, and nursery/floriculture/sod (<http://www.nass.usda.gov>; accessed May 2012).

Forest industry was once a major landowner in the county and much of the planted pine acreage is due to that fact. However, many acres of former forest industry lands have been sold to developers, investment companies, and private individuals. The majority of timber harvested in the county as in the rest of the U.S. comes from private landowners. Even though Chesterfield County is rapidly developing, many landowners still actively manage their forest resource especially in the southern and western portions of the county. Chesterfield's forests provide raw materials to Virginia's Forest Products Industry which is still the largest manufacturing industry in the Commonwealth. Between 1986 and 2006, approximately \$56,872,938 worth of timber was harvested in Chesterfield County. The average amount harvested during those 21 years was \$2,708,235 per year. The highest amount harvested was \$6,334,124 in 2000 (VDOF 2010). Table 3.6 describes the major employment sectors in communities near the refuge.

**Table 3.6. Percentage of Civilian Workforce Over 16 Years or Older by Industry, 2010.**

	City of Richmond	City of Hopewell	Chesterfield County	Charles City County	Henrico County
Agriculture, forestry, fishing and hunting, and mining	0.1	0.3	0.3	2.7	0.0
Construction	5.1	7.7	6.6	9.8	4.6
Manufacturing	9.0	9.9	8.6	16.7	6.8
Wholesale Trade	1.9	1.2	3.0	2.8	2.9
Retail Trade	10.7	14.8	12.2	12.0	11.5
Transportation, warehousing, and utilities	4.0	5.5	4.7	6.9	4.1
Information	1.9	0.7	1.5	0.6	1.4
Finance, insurance, real estate, leasing, and rental	8.9	4.1	10.0	4.3	14.9
Professional, scientific, management, administrative, and waste management services	13.4	10.7	10.6	10.4	14.3

	City of Richmond	City of Hopewell	Chesterfield County	Charles City County	Henrico County
Educational services, health care, and social assistance	22.7	23.6	22.9	16.1	20.5
Arts, entertainment, recreation, accommodation, and food services	11.3	10.4	5.9	6.5	8.5
Public administration	6.3	6.2	9.0	6.7	6.3
Other services	4.6	4.9	4.6	4.6	4.0

(U.S. Census Bureau 2012)

### 3.8.2 Refuge Contributions to the Local Economies

Recreational visitors to the refuge can impact local income and employment. According to the 2007 “Banking on Nature” report compiled by Service economists, the Refuge System is a major economic engine for local communities (Carver and Caudill 2007). A study conducted in 2007 based on data from the 2006 Refuge Annual Performance Plan, indicates that visitation numbers at Presquile NWR have been growing at an average rate of about 20 percent per year since 2003. In general, approximately 80 percent of visitors to Presquile NWR live within a 30-mile radius of the refuge. In 2006, total visitor recreation expenditures at Presquile NWR were \$12,300, of which 62 percent represented non-residents (Carver and Caudill 2007).

Presquile NWR further contributes to the regional economy through direct expenditures and refuge revenue sharing payments to Chesterfield County. Direct operational expenditures include those made for supplies, services, and utilities required for the refuge, and are designated within a 50-mile radius of the refuge. The Federal government does not pay property taxes on purchased refuge lands, instead, the Revenue Sharing Act (16 U.S.C.715s) requires that the revenue sharing payments to counties for our purchased land will be based on the greatest of (a) three-quarters of 1 percent of the market value, (b) 25 percent of the net receipts, or (c) 75 cents per acre (USFWS 2002). Annual revenue sharing payments have been made to the county, based on a maximum of 0.75 percent of the fair market value of refuge lands, as determined by appraisal every 5 years. The actual amount varies each year, and is based on Congressional appropriations. Table 3.7 provides the amounts contributed to Chesterfield County between 2005 and 2010.

**Table 3.7. Revenue Sharing Payments to Chesterfield County, Fiscal Years 2005 to 2010**

Year	Acres	Full Payment	Actual Payment	Percent of Full Payment
2005	1,329	\$11,010	\$5,125	46.5 percent
2006	1,329	\$11,010	\$4,743	43.1 percent
2007	1,329	\$11,010	\$4,587	41.7 percent
2008	1,329	\$11,010	\$3,698	33.6 percent
2009	1,329	\$11,010	\$3,344	30.7 percent
2010	1,329	\$11,010	\$4,927	21.4 percent



The refuge also contributes indirectly to the economy of Chesterfield County and the Richmond Metropolitan Statistical Area by protecting wildlife habitat, or open space, in perpetuity. Other significant public recreational lands near Presquile NWR include Federal and State parks in the cities of Richmond and Chesterfield, and Hanover, Henrico, and Prince George Counties.

## 3.9 Special Status Areas

### 3.9.1 Federally Designated Special Status Areas

Federally designated special status areas include wilderness areas, national natural landmarks, research natural areas, experimental research areas, world heritage sites, biosphere reserves, wild and scenic rivers, national trails, national marine sanctuaries, Ramsar wetlands sites, Class I and Class II clean air areas, and critical habitat for endangered, threatened, and rare species management. Designated areas within the vicinity of the refuge are highlighted below.

#### Wilderness Area

As part of the planning process, we also evaluated all the federally owned (in fee title) lands on the refuge for their possible inclusion into the National Wilderness Preservation System. We completed a wilderness review for this CCP, with the recommendation that we not proceed further with a wilderness study because we determined that refuge lands do not meet the criteria for eligibility. Please refer to appendix D for the results of our assessment.

The closest designated wilderness area to the refuge is the Three Ridges Wilderness, which is located 80 miles northwest of the refuge in the George Washington National Forest in Nelson County, Virginia.

#### National Wild and Scenic Rivers

The National Wild and Scenic Rivers Act (16 U.S.C. 1271-1287) established a process for identifying free-flowing rivers deserving of Federal protection to preserve them and their immediate environments for the use and enjoyment of present and future generations. The NPS compiles and maintains the Nationwide Rivers Inventory, which is a register of river segments that potentially qualify as national wild, scenic, or recreational river areas.

Service planning policy requires us to conduct a wild and scenic river review during the CCP process if applicable. We did not conduct a wild and scenic river review for Presquile NWR because there are no rivers or segments of rivers that qualify for review within the refuge boundary.

The nearest river segment that has the potential for national wild and scenic river designation is a portion of the James River that begins downriver from Presquile NWR, at Hopewell City, to Mogarts Beach in Isle of Wight County, Virginia. This 62-mile segment is one of the most significant historic, relatively undeveloped rivers in the entire Northeast region. Within or adjacent to the corridor are four National Register sites and one National Historic Park (NPS 2009).

#### National Park System Units

Portions of four NPS units are within a 5-mile radius of Presquile NWR. The refuge is located on the James River segment of the Captain John Smith Chesapeake NHT, within the Chesapeake Bay Gateways and Watertrails Network (CBGN), just over 2 miles north of the City Point unit of Petersburg National Battlefield, and 3 miles south of the Glendale/Malvern Hill Battlefield unit of Richmond National Battlefield Park.

In October 2010, the Service and NPS signed a Memorandum of Understanding (MOU) regarding cooperation and collaboration on a variety of efforts within the Chesapeake Bay Watershed, including the Captain John Smith Chesapeake NHT and CBGN.

*Captain John Smith Chesapeake NHT*

Presquile NWR is located on the James River segment of the Captain John Smith Chesapeake NHT, and refuge staff actively participated on the interagency planning team to develop the James River Segment Trail Plan during 2011. Presquile NWR is within the Captain John Smith Chesapeake NHT's James River Oxbow focus area, along with Henricus Historical Park and the Dutch Gap Conservation Area. Combined, these sites have an annual visitation of over 145,000 people, the bulk of who visit the reconstruction of the second oldest English settlement at Henricus. The refuge has been identified as a key site for interpretation and education because it offers views reminiscent of the 17th century and Virginia Indian life, in marked contrast with the adjacent, heavily impacted industrial sites and lands (NPS 2011); additional details about the refuge's cultural landscapes are provided in section 3.12. Through continued collaboration, the Service and NPS will ensure that Captain John Smith Chesapeake NHT-related activities proposed to occur at Presquile NWR are implemented in a manner that is compatible with the purpose and intent of the refuge.



Cyrus Brame/USFWS

*Canoeing along the Captain John Smith Chesapeake National Historic Trail*

*Chesapeake Bay Gateways and Watertrails Network*

Established by Congress in 1998, the CBGN is a partnership of parks, wildlife refuges, historic sites, museums, historic vessels, environmental education centers, information centers, byways, and water trails that provides people with opportunities for meaningful Chesapeake Bay experiences. The primary goal of the CBGN as envisioned by Congress is to foster citizen stewardship of the Chesapeake Bay. The Chesapeake Bay Office of the NPS administers the CBGN program, officially designating gateways, and providing technical and financial assistance.

*Petersburg National Battlefield*

Petersburg, Virginia, was an important supply center to the Confederate capital during the Civil War. Both the Union and Confederacy recognized that severing the supply network of roads and railroads would force General Lee to leave both Petersburg and Richmond. General Grant established his headquarters at the small port town of City Point, located at the confluence of the James and Appomattox Rivers.

*Richmond National Battlefield Park*

As the industrial and political capital of the Confederacy, Richmond, Virginia was at the heart of the Civil War (1861 to 1865). Richmond was the physical and psychological prize over which the two American armies contended in battles throughout farm fields surrounding Richmond. Previously unknown places like Cold Harbor, Gaines' Mill, Malvern Hill, and New Market Heights attained national significance for the key battles that were fought in the vicinity of Richmond.

Presquile NWR is located approximately 3 miles south of Glendale and Malvern Hill. Often identified as one of the Confederate army's great lost opportunities, the Battle of Glendale was the next to last of the Seven Days Campaign. With the Union army in full retreat toward the James River in the face of Lee's offensive, the Southern army set its sights on the critical intersection at Riddle's Shop, often called Glendale and sometimes referred to as Charles City Crossroads. Most of the Union army would have to funnel through that bottleneck on its way to the river. The climactic battle of the Seven Days Campaign ended at Malvern Hill on July 1, 1862. Malvern Hill remains the best preserved Civil War battlefield in central and southern Virginia. Today, the battlefield's nearly unaltered appearance, rural setting, and extensive walking trails offer an ideal environment for visitors to study this battle.

**Ramsar Wetlands of International Importance**

The Convention on Wetlands of International Importance, commonly referred to as the Ramsar Convention due to its origination in Ramsar, Iran, is an intergovernmental treaty to promote the conservation and wise use of wetlands and their resources. The treaty was adopted in 1971 and includes many countries and nongovernmental organizations concerned about the increasing loss and degradation of wetland habitat. Signatories to the treaty have committed themselves to implementing the "three pillars" of the Convention: to designate suitable wetlands for the List of Wetlands of International Importance ("Ramsar List") and ensure their effective management; to work towards the wise use of all their wetlands through national land-use planning, appropriate policies and legislation, management actions, and public education; and to cooperate internationally concerning transboundary wetlands, shared wetland systems, shared species, and development projects that may affect wetlands ([http://www.ramsar.org/cda/en/ramsar-about-sites/main/ramsar/1-36-55\\_4000\\_0\\_\\_](http://www.ramsar.org/cda/en/ramsar-about-sites/main/ramsar/1-36-55_4000_0__); accessed June 2012).

In 1987, the Chesapeake Bay Estuarine Complex, including its 10 tributary rivers, was placed on the Ramsar List (Site 375). This site was listed based on its rich diversity of estuarine habitats and associated fish and wildlife. Noted highlights include its particular importance for very large numbers of staging and wintering waterfowl and other waterbirds, habitat for threatened and endangered species, and the economic importance of its fishery. The James River, including the refuge, is part of this Ramsar site.

**3.9.2 State or Local Government Designated Areas****Virginia Scenic Rivers**

The Virginia Scenic Rivers Act of 1970 created a Statewide program to protect and preserve rivers, or sections of rivers, having natural or scenic beauty and cultural and historic interest. The Code of Virginia (§10.1-402) provides that the VDCR may fully review and make recommendation to Federal, State, and local agencies regarding the planning for use and development of water and related land resources so that scenic rivers resources are protected.

More than 529 river miles on 24 rivers have been recognized since 1975 (VDCR 2010). Thirteen additional rivers have been evaluated and found to qualify for scenic river designation. Presquile NWR is located along a section of the James River (Segment 48: James River-Orleans Street to Surry County) that

has been evaluated and found worthy of designation, but has yet to be designated (VDCR 2007).

#### **Chesapeake Bay Preservation Areas**

VDCR's Division of Stormwater Management, Local Implementation administers the coastal lands management enforceable policy of the Virginia Coastal Program which is governed by the Chesapeake Bay Preservation Act (Bay Act) (Virginia Code §10.1-2100-10.1-2114) and Chesapeake Bay Preservation Area Designation and Management Regulations (9 VAC 10-20 et seq.). Under the Bay Act (Virginia Code §10.1-1200 et seq.), localities within the State's coastal zone have enacted programs designed to improve water quality in the bay through the mitigation of the impacts of development and redevelopment on sensitive environmental features such as streams, wetlands, floodplains, and highly erodible and highly permeable soils.

Resource protection areas and resource management areas have been designated in each locality; these areas consist of groupings of sensitive environmental features. Resource protection area features (tidal wetlands, certain non-tidal wetlands, tidal shores, and buffer areas) are the most sensitive; in general, only water-dependent uses may be constructed in a resource protection area. Resource management area features (highly erodible soils, highly permeable soils, and certain non-tidal wetlands) are less sensitive than resource protection areas features. Development in a resource management area requires that activities meet certain performance criteria designed to mitigate negative environmental impacts.

As defined by the county ordinance (Chesterfield County Office of Water Quality and Chesterfield County Planning Department 2002), the resource protection areas on the refuge are locations:

- Where surface water bodies occur.
- That are within 300 feet of the James River.
- Where tidal wetlands are within 1,000 feet.

The remaining portions of the refuge are located within a resource management area because:

- There are no surface water bodies within the area.
- The James River is more than 300 feet from the project location.
- The nearest tidal wetlands are more than 1,000 feet east of the project location.

#### **Natural Heritage Conservation Sites**

Natural heritage conservation sites are defined by the State as the habitat of rare, threatened, or endangered plant and animal species; unique or exemplary natural communities; and significant geologic formations. Two State natural heritage conservation sites are located near the refuge: the Turkey Island Conservation Site and the Curles Neck Conservation Site. The natural heritage resource of concern at both sites is the bald eagle (VDEQ letter dated January 25, 2012, regarding USFWS 2011 EA for proposed enhancement of overnight accommodations [Overnight Accommodations EA]).

VNHP has recommended that a natural heritage conservation site be established to include the refuge's northern marsh and adjacent lower marshes of Turkey Island Creek. Such a designation is intended to protect habitat for rare species, protect water quality, provide buffers from potentially detrimental land uses,

and help maintain ecological processes necessary for the perpetuation of the significant elements of the area.

#### **Bald Eagle Concentration Areas**

The refuge is also within the James River Winter and Summer Bald Eagle Concentration Zone designated by the VDGIF. As the winter and summer concentration areas have expanded or modified with the growth in eagle population, their boundaries are being redrawn based on summer and winter boat and aerial surveys. This new data has yet to be published; however, the large population of wintering eagles in the area provided the basis for designation and footprint of the Lower James River Important Bird Area, discussed below.

#### **Anadromous Fish Use Area**

According to VDGIF, the James River has been designated an anadromous fish use area. Six anadromous fish species occur in this portion of the James River: alewife, American shad, striped bass, blueback herring, yellow perch, and hickory shad. Striped bass are also known to occur in Turkey Island Creek, to the north of Presquile NWR.

### **3.9.3 Other Special Status Areas**

#### **Lower James River Important Bird Area**

In 2007, the National Audubon Society designated the tidal James River and 1.9 miles landward on each side as an important bird area largely due to the high concentrations of bald eagles using this area during the winter and summer months. The oligohaline (brackish water with low salinity) portions of the Potomac, Rappahannock, and James Rivers are convergent zones for northern eagle populations in the winter, southern eagle populations in early summer, and year-round for the Chesapeake Bay population. Where mature forests containing suitable perch trees border the river, much higher numbers of eagles are found compared to more developed, fresher, or more saline portions of the river.

## **3.10 Refuge Administration**

### **3.10.1 Staffing**

Established in March of 1953, Presquile NWR is the oldest refuge in the Eastern Virginia Rivers NWR Complex. The term “refuge complex” is used to describe a situation where two or more individual refuges, typically in the same region of the State or adjoining states, are combined under a single refuge manager’s responsibility. When staff and other resources were redirected in 2000, management responsibility for Presquile and James River NWRs was transferred to the refuge manager stationed at the newly formed Rappahannock River Valley NWR. This three-refuge grouping was named the Eastern Virginia Rivers NWR Complex. In 2003, Plum Tree Island NWR, established in 1972 in Poquoson, Virginia, was also added to the refuge complex.

Current refuge complex staffing consists of eight positions. The following six positions are stationed at the Eastern Virginia Rivers NWR Complex headquarters located on the Rappahannock River Valley NWR in Warsaw, Virginia: refuge manager, deputy refuge manager, administrative assistant, wildlife biologist, law enforcement officer, and maintenance worker. The remaining two staff members, an assistant refuge manager and natural resource planner, are stationed at the Harrison Lake National Fish Hatchery in Charles City, Virginia. The refuge has also employed a stipend-funded, summer natural resources intern annually since 2004.

All the positions within the refuge complex share in the responsibility for all four refuge units. The refuge complex manager is responsible for determining the priorities for the refuge complex and how to distribute staff time and resources among the four refuges. Since 2003, one full-time employee has been

administering activities and providing visitor services at Presquile NWR, as well as at James River NWR and Plum Tree Island NWR, with assistance from other refuge staff as needed.

**3.10.2 Budget**

The funding for Presquile NWR comes out of the budget for the entire Eastern Virginia Rivers NWR Complex. Approximately 80 percent of the complex budget is allocated to Rappahannock River Valley NWR because it supports complex operations and is the largest refuge in the complex. Operational funding includes salaries, supplies, utilities, fuel, and all other operational activities (wildlife and habitat surveys and management) that are not funded by special projects. Base maintenance funds are used to repair vehicles, equipment, and facilities and have been generally stable over the past 5 years. Replacement of vehicles, larger pieces of equipment (tractor, backhoe), or larger facilities (buildings) are funded as projects. Annual funding fluctuates according to the number and size of projects funded in a given year (e.g., vehicle or equipment replacement, visitor service enhancements, and facility improvements) (table 3.8).

**Table 3.8. Funding and Staff Allocations for the Eastern Virginia Rivers NWR Complex, 2005 to 2011**

Year	Operations	Maintenance	Projects	Cost Share	Total Funding	Staff
2005	\$650,748	\$23,520	\$368,229	\$8,133	\$1,050,630	8.34
2006	\$588,006	\$24,535	\$474,459	\$11,272	\$1,098,272	8.00
2007	\$782,083	\$59,117	\$116,917	\$10,606	\$968,723	8.30
2008	\$734,535	\$22,034	\$41,283	\$2,469	\$800,321	8.35
2009	\$788,886	\$24,000	\$469,021	\$7,999	\$1,289,906	7.40
2010	\$823,579	\$27,016	\$38,771	\$54,172	\$943,538	7.00
2011	\$963,324	\$27,410	\$290,260	\$0	\$1,280,994	7.40

*80 percent of the complex budget is allocated to Rappahannock River Valley NWR  
20 percent is divided among the other three refuges; it is not divided equally*

**3.10.3 Lands**

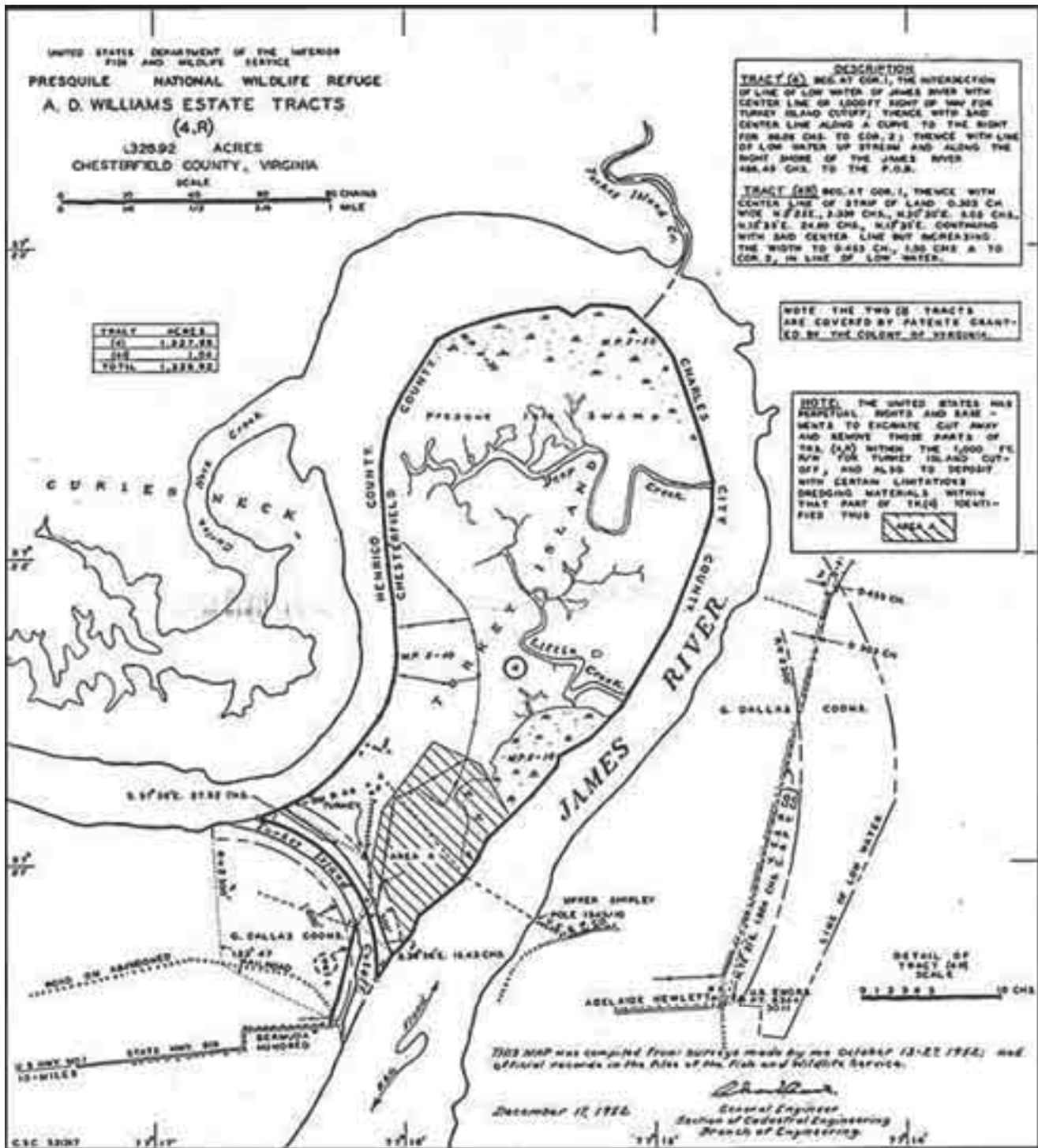
**Land Acquisition History and Easements**

The 1,329 acres of lands and waters that Mr. A. D. Williams bequeathed to the U.S. Department of the Interior were used to establish Presquile NWR. Those acres now include three easements (map 3.1).

The island portion of the refuge is bounded to the north, east, and west by the line of low water along the right shore of the James River, and on the southwest by the centerline of a 1,000-footwide right-of-way for the Turkey Island Cutoff. The USACE has perpetual rights to excavate, cut away, and remove lands in the Turkey Island Cutoff right-of-way and deposit dredge materials at a designated site on the refuge (labeled Area A on map 3.1). Based on a review of current and historic aerial photography, we have estimated that 12 acres of uplands adjacent to the Cutoff have eroded between 1968 and 2009. Although this erosion seems to be within the 500-footwide USACE easement on the refuge, we are concerned that continued erosion of this bank degrades water quality of the Lower James River and Chesapeake Bay, and threatens archaeological resources and refuge facilities.

An electric powerline is located on private property to the east of the refuge provides electric power service via submarine cable across the James River to the refuge’s eastern shore.

Map 3.1 Original Easements as of Presquile NWR Establishment in 1953



A 1-acre, 30-footwide access easement is located on the Philip Morris USA Park 500 property and is bound to the north by the line of low water on the southside of Turkey Island Cutoff. This easement provides for refuge access via a gated access to an unimproved gravel road and use of the cable ferry's mainland terminal (see section 3.10.4 below for additional details). The Service and Philip Morris USA have maintained a good working relationship over the years regarding safety, security, and maintenance of the existing facilities and use of the site as a meeting location for refuge staff, partners, and visitors.

#### **Future Potential for Additional Land Protection**

Expanding the boundary of Presquile NWR is not currently a high priority for the Service. However, should land associated with the refuge's access easement on the Philip Morris USA lands and USACE Turkey Island Cutoff right-of-way become available, the Service would be interested in expanding the existing easement or acquiring it to enhance facilities to support refuge operations and visitor services, as well as wildlife habitat restoration.

Adjacent lands along the James River Oxbow are also of interest for land protection by the Service because they would enhance our ability to conserve migratory waterfowl in the existing area that is closed to waterfowl hunting. Additionally, protection of the lands adjacent to Turkey Island Creek would enhance non-motorized boating access and experiences associated with the Captain John Smith Chesapeake NHT. The Service would only consider lands offered by willing sellers.

Permanent protection of the more than 5,000-acre former dairy farm to the west of Presquile NWR, known as Curles Neck, would also enhance the conservation value of the area to migratory birds and native plant communities. However, acquisition of such a large tract, already impacted by human activity, can pose additional management difficulties.

#### **3.10.4 Facilities**

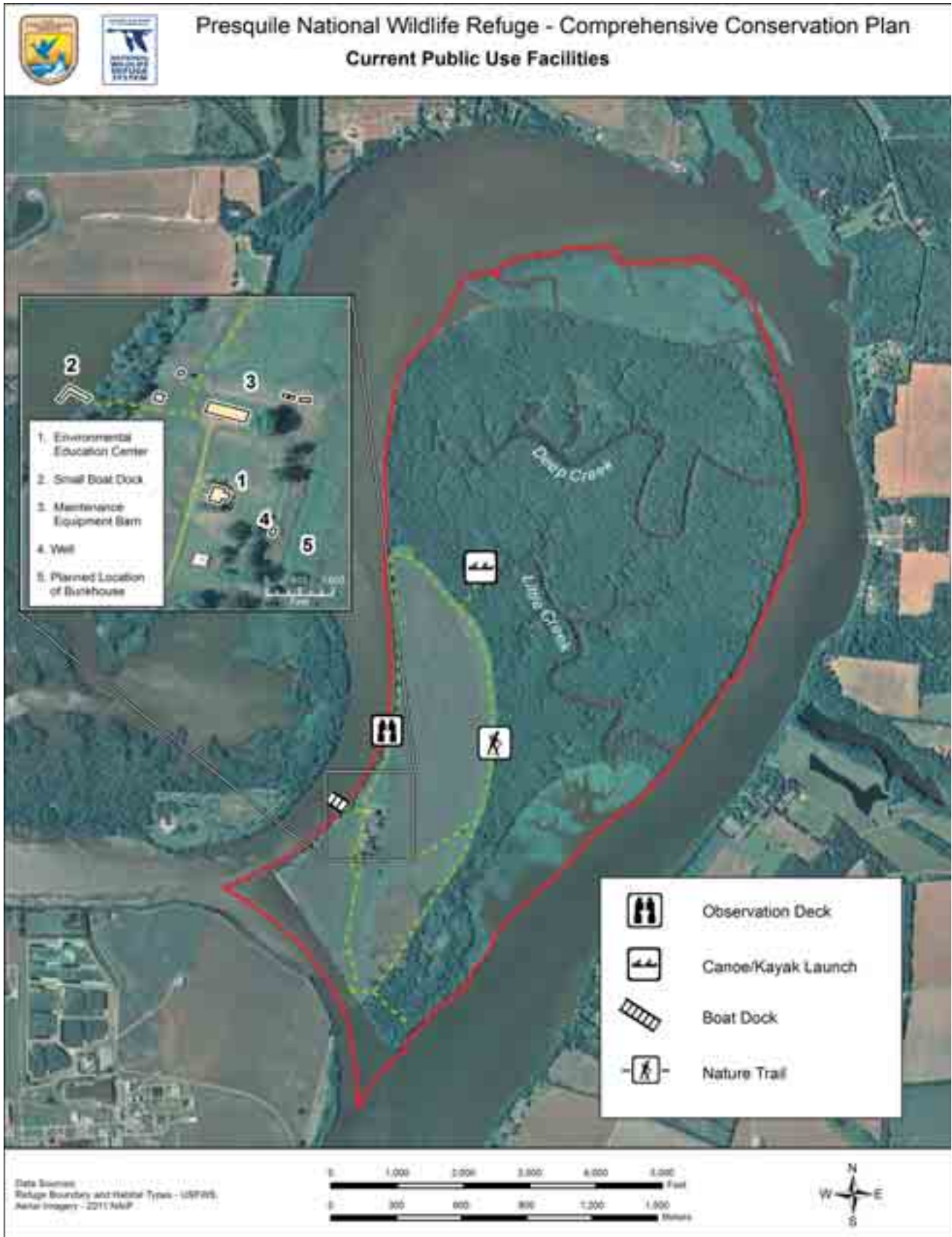
Presquile NWR's cable ferry was constructed in the 1930s after creation of the Turkey Island Cutoff (map 3.1). It was originally used to support agricultural operations on the island. The ferry has a gasoline-powered motor that propels it along a 1-inch thick submarine cable. The cable ferry was used to transport refuge staff and visitors until 2001, when it was deemed unsafe for transporting refuge visitors by the U.S. Coast Guard. The ferry continues to be used for administrative purposes, such as transporting equipment.

The primary access point for refuge visitors is at a floating dock located on the western side of the island (map 3.2). With prior approval, visitors may access the refuge at a small kayak/canoe launch at Little Creek and boardwalk for wildlife observation, photography, environmental education, and interpretation. The low-impact kayak/canoe launch, gazebo, and 550-foot long boardwalk are a spur of the 3.5-mile nature trail, through the tidal swamp forest. Construction of the launch and boardwalk was partially funded by the CBGN grant. Refuge partners and volunteers completed its construction in 2011. Additional boat landing areas are authorized to support the refuge's 3-day public deer hunt. The public use area totals 23 acres, including the trails and maintained lawn surrounding the environmental education center, buildings, and boating facilities.

Buildings associated with refuge operations include an open-stall equipment storage barn, a few wooden and cinderblock storage sheds, and a small shed near the refuge's ferry terminal. We have recently completed building renovations to the environmental education center, are currently constructing a new bunkhouse facility, and anticipate needing to maintain these and other existing refuge facilities (see appendix C). A former ranch house now serves as the education



Map 3.2 Current Public Use Facilities on Presquile NWR



*Small boat dock*



Cyrus Brame/USFWS

center in this public use area. It was recently renovated to become Leadership in Energy and Environmental Design (LEED)-compliant and American with Disabilities Act (ADA)-accessible. The facility has been named the “Menenak Discovery Center.” Menenak (pronounced: men-NEN-ak) is an Algonquin word, meaning island. The Menenak Discovery Center includes a small interpretive exhibit hall, a dining and meeting space, and two restrooms with showers.

In 2012, the Service approved a FONSI for the construction of a bunkhouse for overnight stays by the JRA Ecology School participants (USFWS 2012b). The sustainably designed and ADA-accessible bunkhouse will be funded and constructed by the JRA. The bunkhouse will offer safe, familiar, comfortable, and dependable shelter for up to 36 people. Construction began in the summer of 2012. The Menenak Discovery Center and bunkhouse support operation of the JRA Ecology School at Presquile NWR. Additional details about the Ecology School are provided in section 3.13.1.

Some other refuge facilities are in need of regular maintenance and repairs to restore or continue supporting refuge operations, protection of wildlife habitat, and public use (see appendix C for the complete list). As discussed in section 3.6, maintenance on the well was recently completed to verify the quality of the drinking water provided on the refuge. The buried septic system that supports restrooms in the environmental education center and equipment storage barn is due for an inspection and maintenance.

We are currently investigating options for improving the refuge’s transportation facilities and the potential for partnerships with nearby mainland marinas to support refuge operations and visitor access. In 2011, we contracted with Vanasse Hangen Brustlin, Inc. (VHB), using funds from a Paul S. Sarbanes Transit in Parks Program (49 U.S.C. 5320), to initiate a transportation study to investigate ways to maintain or improve access to this island-refuge for both refuge administration and visitor services purposes. The transportation study was completed in August 2012 and identified a range of feasible transportation system improvement options, including reuse or upgrade of the existing ferry system, an evaluation of nearby mainland marinas, or development of new facilities to accommodate a range of modes of access (VHB 2012).

### 3.10.5 Refuge Access Permit Requirement

Since its establishment, refuge managers at Presquile NWR have used the full range of discretion to manage public access, use, and recreation activities at the refuge by issuing special regulations, individual permits, or public notices in accordance with Service regulations (50 CFR 25 et seq.) and policies (603 FW 1, 603 FW 2, and 605 FW 1).

From refuge establishment through 2001, most visitors accessed the refuge on the federally owned and operated cable ferry. Refuge visitation has been affected by recent reductions in refuge staff, budget, and transportation capabilities. During the 1980s, three full-time employees and one part-time employee administered activities and facilitated visits by ferrying approximately 2,600 people to the refuge annually. In 2001, the U.S. Coast Guard deemed the ferry unsafe for continued transportation of the public to Presquile NWR. Since 2003, one full-time employee has been administering activities and providing visitor services at Presquile NWR, as well as at James River NWR and Plum Tree Island NWR.

Access to Presquile NWR is authorized through:

- Participation in a refuge-sponsored program.
- Participation in a partner-sponsored program for which the partner has been issued a general special use permit.
- An individual general special use permit.
- A hunting permit.

Instructions regarding refuge access requirements are provided on the refuge Web site: <http://www.fws.gov/northeast/presquile> (accessed May 2012).

We provide additional information regarding public uses at the refuge in section 3.13.

## 3.11 Refuge Natural Resources

### 3.11.1 Soils

The low-lying terrain of the refuge is characterized by either tidal marsh or mucky peat (swamp) soils. Most of the upland soils are moderately well-drained Toccoa fine sandy loam and well-drained Pamunkey loam developed from alluvium transported by the James River. Prior to 1934, this section of the river formed a large oxbow (USFWS 2004a). With the excavation of the Turkey Island Cutoff, some of the soil was deposited at the southeast side of the refuge (map 3.1). A summary of the characteristics of major soil types follows in table 3.9. Additional information can be obtained from the refuge headquarters.

According to Natural Resource Conservation Service (NRCS 2011), the Pamunkey and Dogue loam soils are prime farmlands. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. The lands within Presquile NWR were likely farmed by American Indian tribes for thousands of years prior to European settlement and farming of wheat, grain, sorghum, corn, and various other agricultural products (Goode et al. 2009). From its establishment until 2000, the Service farmed the uplands on Presquile NWR for the benefit of migratory waterfowl until 2000 (Brame personal communication).

**Table 3.9. Summary of the Six Most Prevalent Soils Types on Presquile NWR**

Soil Type	Local Landform	Hydric, Traits	Suitability	Acres <sup>1</sup> (percentage of total refuge)
Hydraquents <sup>2</sup>	Tidal marsh/ Floodplains	Very poorly drained/ hydric; frequent flooding & ponding	Agriculture: Poor Silviculture: Poor	1,063 (80 percent)
Pamunkey Loam, 0 to 6 percent slopes	Stream terraces	Well drained	Agriculture: Good Silviculture: Good	173 (13 percent)
Chewacla Loam	Floodplains	Somewhat poorly drained; frequent flooding	Agriculture: Poor Silviculture: Poor	40 (3 percent)
Pamunkey Loam, 6 to 12 percent slopes	Stream terraces	Well drained	Agriculture: Good Silviculture: Good	26 (2 percent)
Toccoa Fine Sandy Loam, 0 to 4 percent slopes	Floodplains	Moderately well drained; frequent flooding	Agriculture: Fair Silviculture: Fair	26 (2 percent)
Dogue Loam, Variant, 0 to 4 percent slopes	Stream terraces	Moderately well drained; rare flooding	Agriculture: Good Silviculture: Good	2 (0.2 percent)
<b>Total</b>				<b>1,329 (100 percent)</b>

<sup>1</sup> Approximate. Includes streams and bays.

Source: Web Soil Survey 2.0, 2007.

### 3.11.2 Vegetation Communities and Associated Special Status Plant Species

Vegetation communities on Presquile NWR were mapped using the “ecological systems” classification system developed by Nature Serve. An ecological system is a “group of plant community types (associations) that tend to co-occur within landscapes with similar ecological processes, substrates, or environmental gradients.” A given ecological system will typically manifest itself in a landscape at intermediate geographic scales of tens to thousands of acres and will persist for 50 or more years (Comer et al. 2003). These units form a cohesive, distinguishable unit on the ground (USFWS 2007b). While “swamp” is the single largest general habitat category on the refuge, by far the most dominant ecological community within the tidal swamp forest is “red maple-green ash tidal woodland,” which dominates the northern half of the refuge. Map 3.3 depicts the current habitat management at the refuge.

In deriving the habitat types we refer to in this CCP, we grouped similar ecological systems into the broader habitat categories identified in table 3.10 since they effectively represent the scale on which management objectives and strategies are proposed in this CCP. However, subsequent planning for the step-down habitat management plan may make use of the more detailed mapping of habitat associations.

Map 3.3 Existing Habitat Types on Presquile NWR

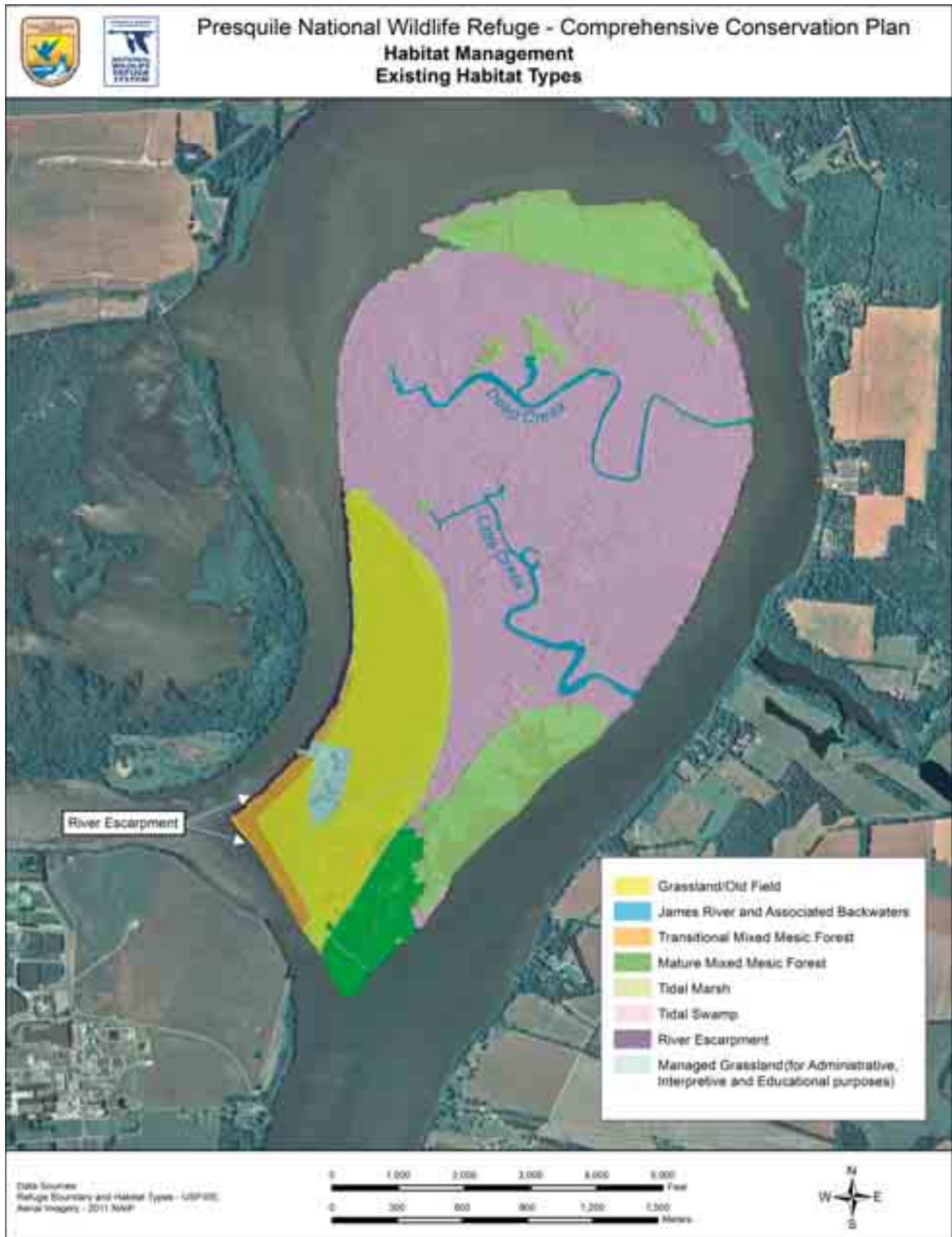


Table 3.10 represents how refuge habitat types were categorized, listing them in descending order by acreage.

**Table 3.10. Refuge Habitat Types at Presquile NWR**

Habitat Type	Acres*
Tidal swamp forest	738
Grassland, former croplands and pasture	200
Tidal freshwater marsh	189
James River and associated backwaters	101
Mature mixed mesic forest	46
Grassland, managed for administrative and educational purposes	23
Transitional mixed mesic forest	20
River escarpment	11
Right-of-way easements	1
<b>Total</b>	<b>1,329</b>

\* Acres estimated from Geographic Information Systems (GIS) and rounded up to nearest whole number

**Tidal Swamp Forest**

Tidal swamp forest habitat at Presquile NWR includes a variety of ecological communities such as tidal woodland, bottomland forest, and saturated forest. The most abundant tree species are green ash, black gum, bald cypress, and red maple. Herbaceous plants are poorly represented in the swamp due to the dense canopy cover of the trees and susceptibility of the area to frequent inundation. Two large creeks and numerous tidal coves penetrate the tidal swamp forest (USFWS 2004a). The refuge’s tidal swamp forests also supports potential habitat for the Virginia least trillium, which is globally vulnerable, a Federal species of concern, and a State-imperiled plant species. Currently, the Virginia least trillium has not been documented on the refuge, but it generally inhabits alluvial woods and pocosin borders.

**Tidal Freshwater Marsh**

Tidal freshwater marsh is concentrated in two main areas at Presquile NWR: the northern tip and southeastern edge of the island. Tidal freshwater marsh habitat is tidally influenced within the refuge boundaries. This marsh type occurs in the uppermost portion of the estuarine zone of the James River, where the inflow of saltwater from tidal influence is diluted by a much larger volume of freshwater from upstream (USFWS 2007b). Salt concentrations in the James River near Presquile NWR range from a high of about 25 ppm in the summer to a low of 10 ppm in the winter. Predominant plant species within the saturated temperate and subpolar grasslands at the northern tip of the island include rice cutgrass and other graminoids (grass species), while the southeastern marsh consists of considerable open water and tidal herbaceous communities dominated by wild rice, salt marsh cordgrass, and arrow arum (USFWS 2004a).

The tidal freshwater marshes in the northern portion of Presquile NWR include a natural vegetation community and are inhabited by special status plant species. Because the refuge’s 189 acres of tidal freshwater marsh is a sizeable acreage of this natural vegetation community, it is considered significant by the VNHP (Belden et al. 2002). Sensitive joint-vetch is a member of the legume family that is federally and State-threatened,



Meghan Carfioi/USFWS

*Smooth beggartick (Bidens laevis) in the tidal swamp forest*

globally imperiled because it only occurs in four coastal states, and is State imperiled in Virginia (Townsend 2007). The VNHP conducted surveys for rare plant species in 1998, 2000, and 2001 (Belden et al. 2002). In 1998, 5 individual sensitive joint-vetch plants were located on a small point bar within the northern marsh; in 2001, 38 plants were located along both sides of a small north-south channel in this same area. This element occurrence is located approximately 7.4 miles upstream from the previous most upstream records for the species on the James River (near Jordan and Harrison Points). A large population of another rare plant, the marsh senna, was also documented in the marsh at the northern end of Presquile NWR. Marsh senna is also a member of the legume family, is globally rare but secure, has a vulnerable ranking in Virginia, and is on the VNHP Watch List (Belden et al. 2002).

### **Grassland**

The refuge has 223 acres of old field habitat on upland soils along the southwestern edge of the refuge and includes areas of pasture, former croplands, and maintained grassland. The grasslands are dominated by orchard grass, fescue grass, and clovers, while the uncultivated cropland is overgrown with Canada thistle, Johnsongrass, crab grass, and rye (USFWS 2004a). The maintained grassland area (23 acres) includes the frequently mown areas surrounding buildings and the nature trail network.

### **Mature Mixed Mesic Forest**

Mature mixed mesic forest is limited in extent and occurs primarily in the southeastern corner of the refuge in the dredge spoils area or along the field edges. The dominant vegetation here includes eastern red cedar and the invasive black locust, all in somewhat open stands with thin herbaceous cover (USFWS 2004a).

### **Transitional Mixed Mesic Forest**

Transitional mixed mesic forest is limited in extent and occurs within 300 feet of the refuge's western border. In order to restore degraded areas caused by fires and dredge spoils, since 1994 we have planted 20 acres with 18 different species of trees with assistance provided by partners, volunteers, and students. This effort is partially funded by the natural resource damage assessment and restoration settlement from the C & R Battery Company, Inc. Superfund Site. The restoration work conducted at Presquile NWR aimed to stabilize bank erosion, respond to the influx of nonnative grasses, and create wildlife corridors, while improving nesting and perching habitat for bald eagles, great blue heron and other wading birds, and other native wildlife ([http://www.fws.gov/northeast/virginiafield/pdf/contaminants/2010May\\_fact%20sheet%20final\\_C&R.pdf](http://www.fws.gov/northeast/virginiafield/pdf/contaminants/2010May_fact%20sheet%20final_C&R.pdf); accessed April 2012).

### **River Escarpment**

A narrow zone of river escarpment habitat is dominated by trees, primarily American sycamore, oak species, black cherry, hackberry, green ash, river birch, and woody vines. This area also includes invasive species such as black locust, European privet, and tree-of-heaven. This escarpment habitat averages about 50 feet in width and often occurs on slopes of 45 percent. It extends from the ferry landing to the southwest point of the island, and from there northeast and north to the wooded swamp (USFWS 2004a).

### **3.11.3 Nonnative, Invasive Plants**

Federal management of nonnative, invasive plant species is guided by Executive Order 13112, "Invasive Species" signed on February 3, 1999. This Executive Order requires that a Council of Departments dealing with invasive species be created and develop a National Invasive Species Management Plan every 2 years. The first such plan was released in January 2001, providing the basis for Federal management of invasive species. The Executive Order defines an invasive species as a species that is nonnative to the ecosystem under consideration, and whose

introduction causes (or is likely to cause) economic or environmental harm, or harm to human health.

The presence of invasive plants can have an adverse impact on the biological integrity, diversity, and environmental health of refuges and other natural areas. Approximately 250 acres of grassland and early successional habitat on the refuge is treated with prescribed fire, mowing, and herbicides to reduce invasive plants. Listed below are several invasive plants that occur on the refuge which are impacting each of the habitats noted. The Service remains vigilant to their presence and spread, and a very active program to control many of them has been implemented (USFWS 2007b). The invasive species identified at Presquile NWR include:

**Uplands**

- Black locust
- Johnsongrass
- Canada thistle
- Japanese honeysuckle
- Japanese stilt-grass
- Tree-of-heaven
- Chinese privet

**Wetlands**

- Marsh dewflower
- Carpgrass

**Uplands**

Johnsongrass and Canada thistle are the predominant invasive upland species on Presquile NWR. The spread of these species has worsened in recent years. Control efforts, primarily herbicide use, has been hampered by logistics of getting equipment onto the island because of issues with ferry operation, or not having access to clean water. The latter issue was recently addressed. The highly invasive Japanese honeysuckle in the fields and forest edges and Japanese stilt-grass in the forest understory are also known on the refuge (USFWS 2006). Tree-of-heaven and Chinese privet are present in the wooded edges bordering the grassland.

**Wetlands**

Marsh dewflower was found on the refuge in September 2006 (USFWS 2006). This plant invades fresh tidal marshes and margins of lakes and ponds (Gleason and Cronquist 1991). Of particular concern, this invasive plant has been found in the vicinity of the federally threatened sensitive joint-vetch at the northern tip of the refuge.



Meghan Carfoll/USFWS

*Grassland thick with Canada thistle and Johnsongrass*

During a brief site visit on November 1, 2007, a consulting biologist observed small carpgrass along the edge of wetlands east of the ferry landing. This nonnative grass can reach 20 to 40 inches in height and displace native wetland plants.

**Aquatic Habitats**

No aquatic invasive species are known to occur within the refuge.



### 3.11.4 Climate Change Impacts on Vegetation

#### Upland Habitat Types

The refuge currently maintains the former cropland as early succession grassland, with grass, forbs, and shrubs on 200 acres and a buffer (generally 100-footwide) of planted trees on the high banks on the west and south sides. Some loss of uplands is expected due to sea level rise (see discussion below) but more may result from erosion, particularly if climate change produces dramatic fluctuations in weather patterns. The shorelines along the cut are high bluffs (20 feet) of unconsolidated and largely unvegetated sand, gravel, and clays that are caving into the river at a rate that has caused concern over the years. Eventually, the planted trees will mature but will topple as their root systems become undercut. Climate change impacts to the vegetation over the long term will also depend on what type of vegetation is being managed for on the refuge and what land use changes occur in the surrounding landscape.

The establishing language for the refuge, specifically to provide winter habitat for migratory geese, has guided past refuge management goals. Whether maintained as a grassland or forest, plant communities and species adapted to warmer subtropical latitudes are expected to expand and establish beyond the northern edge of their current range. If the grasslands are allowed to reforest, then an increase in mixed pines and southern oak species would be a likely scenario, depending also on the vegetation in the surrounding landscape.

Some possible positive effects on grasslands and forests from climate change include increased productivity through longer growing seasons, increased precipitation, and increased carbon dioxide fertilization which will increase primary production and yield greater biomass and soil inputs. Predicted increase in fire frequency (to a degree) would also be beneficial to native grasses that have deep root systems.

Some negative effects include extreme weather events causing damage and erosion, altered timing of aquifer recharge leading to potential declines in summer seasonal streamflow, species range shifts which would mean a decline of some species, increased severity in stress factors and increased susceptibility to disturbance. We may also expect expanded pest and disease ranges due to decreased probability of lower lethal temperatures, migrations to the north, and accelerated life cycles. Also, expected is an increase in the frequency or intensity of fire where there is less summer moisture. Mature trees, however, should fare better because of developed root systems and higher carbon reserves (Swanston et al. 2011).

The U.S. Forest Service assessed the current and predicted status of 134 tree species following climate change. Three global climate or general circulation models were combined to produce high or low averages that can be accessed through an interactive program, the Climate Change Tree Atlas, for displaying the range expansion (or contraction) of suitable habitat for each species by the year 2100 (<http://www.nrs.fs.fed.us/atlas/tree/>; accessed May 2012). Models are provided for green ash, black gum, bald cypress, and red maple, which are common species in the refuge's tidal swamp forest, as well as American sycamore, black cherry, river birch, black locust, eastern red cedar, and various species of oak, which are common in upland areas on the refuge.

#### Wetland Habitat Types

A significant increase in sea level rise would inundate most of the refuge wetlands. Excessive submergence drains carbon reserves from plants thereby reducing peat formation and plant productivity. Marshes would be converted to unvegetated mudflats. Moreover, rise in ambient temperature would reduce oxygen concentrations in the water column of eroded marsh embankments rendering them poor habitat for most fish species (USFWS 2007b).

Furthermore, highly organic sediment resulting from eroding tidal marshes presents problems for SAV. The loss of SAV beds has a huge impact on the ecology of the James River as well as the bay. SAV beds represent a critical habitat component for such species as waterfowl, fish, and other aquatic species including the economically important blue crab (USFWS 2007b).

Although the full effects of climate change will take longer than the 15-year planning horizon of this document, and predictions at this point are largely speculative without local, specific trend information, there are some generalizations that could be made. For example, increased sea levels will not only remove some wetland habitat, but extend or create it elsewhere, depending on topography. Increased storm events, drought, and flooding, will exert a form of natural selection on upland vegetation, creating greater age-class diversity than exists now, and promoting species structurally and physiologically able to withstand catastrophic events. We will likely see the rearrangement of vegetation communities according to their hydric (wet) or xeric (dry) affiliations.

In an effort to address the potential effects of sea level rise on national wildlife refuges, the Service contracted the application of the SLAMM for most Region 5 refuges. This analysis is designed to assist in the production of CCPs for each refuge along with other long-term management plans. SLAMM accounts for the dominant processes involved in wetland and shoreline changes during long term sea level rise. Tidal marshes are among the most susceptible ecosystems to climate change, especially accelerated sea level rise. Predicted global sea level rise scenarios range from a conservative estimate of 11.8 to 39.4 inches by 2100, to a moderate estimate of 19.7 to 55.1 inches, and to the upper extreme of 72 inches. The SLAMM model is based on the A1B scenario of climate change developed by the IPCC. The A1 family of scenarios assumes rapid economic growth, a rapid population growth that peaks mid-century and declines thereafter, and use of efficient technologies. The full SLAMM report is too lengthy to include in this document; however, it is available at the refuge office (Clough and Larson 2010).

The SLAMM report for Presquile NWR indicates that the refuge is highly vulnerable to the sea level rise scenarios modeled. It is important for the reader of this CCP to know that the SLAMM report also classified habitat types differently than we have for the purposes of this CCP. Regardless, the results of the SLAMM analysis indicate that tidal swamps are predicted to convert first to irregularly flooded marsh. They would then convert to regularly flooded marsh (potentially salt marsh depending on water salinity), then to non-vegetated tidal flats, and finally to open water. Under lower scenarios of sea level rise, only a small portion of tidal swamp is predicted to convert to marsh by 2100. Under higher scenarios, much open water and tidal flats become visible. The tidal swamp in the northwest corner of the refuge is most vulnerable because of its low elevation (Clough and Larson 2010).

These results are subject to considerable uncertainty, particularly due to poor elevation data for the refuge. Unfortunately, high vertical-resolution Light Detection and Ranging (LiDAR) elevation data were not available for this site (LiDAR is a remote sensing system used by the National Oceanic and Atmospheric Administration (NOAA) and National Aeronautics and Space Administration (NASA) to collect topographic changes along shorelines). Elevation data used for model simulations were based on 1968 maps from the USGS National Elevation Dataset, with contour intervals of 10 feet. To determine the area of wetland types at risk, the National Wetlands Inventory was used based on a 1994 photo. Converting this National Wetlands Inventory survey into 30-meter cells and interpolating between the 10-foot contour intervals within the 1,329-acre refuge boundary provided the acreages of wetlands types shown in table 3.11 (Clough and Larson 2010).

**Table 3.11. Results in Acres for Presquile NWR and IPCC Scenario A1B-Mean, 0.39-Meter Sea Level Rise Global by 2100 (Clough and Larson 2010)**

Habitat Type	Habitat Acres (Percent of Total Acreage)				
	Year 2010	Year 2025	Year 2050	Year 2075	Year 2100
Tidal Swamp	735.7	725	698.2	661.5	622.9
	(56.8 percent)	(55.9 percent)	(53.9 percent)	(51.0 percent)	(48.1 percent)
Undeveloped Dry Land	287.6	286.1	280.7	277.7	271.3
	(22.2 percent)	(22.1 percent)	(21.7 percent)	(21.4 percent)	(20.9 percent)
Riverine Tidal	140.8	140.3	129.4	107.6	103.4
	(10.9 percent)	(10.8 percent)	(10.0 percent)	(8.3 percent)	(8.0 percent)
Tidal Fresh Marsh	126.3	126.3	126.3	126.3	126.3
	(9.7 percent)	(9.7 percent)	(9.7 percent)	(9.7 percent)	(9.7 percent)
Inland Shore	4.2	4.2	4.2	4.2	4.2
	(0.3 percent)	(0.3 percent)	(0.3 percent)	(0.3 percent)	(0.3 percent)
Swamp	1.3	1.3	4.7	4.7	8
	(0.1 percent)	(0.1 percent)	(0.4 percent)	(0.4 percent)	(0.6 percent)
Irregularly Flooded Marsh	0	10.7	37.5	74.2	112.8
	(0.0 percent)	(0.8 percent)	(2.9 percent)	(5.7 percent)	(8.7 percent)
Saltmarsh	0	0	0.5	1.6	3.5
	(0.0 percent)	(0.0 percent)	(0.0 percent)	(0.1 percent)	(0.3 percent)
Estuarine Open Water	0	0.4	11.3	33.1	37.4
	(0.0 percent)	(0.0 percent)	(0.9 percent)	(2.6 percent)	(2.9 percent)
Trans. Salt Marsh	0	1.4	2.9	5	6.1
	(0.0 percent)	(0.1 percent)	(0.2 percent)	(0.4 percent)	(0.5 percent)
Total Acreage	1295.9	1295.9	1295.9	1295.9	1295.9
	(100 percent)	(100 percent)	(100 percent)	(100 percent)	(100 percent)

### 3.11.5 Wildlife

#### Birds

Since 1953, the Hopewell Chapter of the National Audubon Society has included the refuge in its annual 1-day Christmas Bird Counts. The Christmas Bird Count is a long-standing program of the National Audubon Society. It is an early-winter bird census, where volunteers follow specified routes through a designated 15-mile diameter circle, counting every bird they see or hear over the course of the day. In 1953, the Hopewell chapter began including the refuge, since it is located within the 15-mile radius of the count circle. The varied habitats of the refuge encourage a diversity of avian species. To date, 103 bird species have been confirmed on refuge property from formal surveys and counts, of which 61 species are known breeders (Spencer 2010) and at least 73 species have been observed during the Christmas Bird Count when survey parties accessed the refuge (Richmond Audubon 2007). It should be noted that the total species list is surely underrepresented, since the logistics of access to the island has made frequent surveys difficult to achieve.

Presquile NWR occurs within BCR 30. At least 29 of the confirmed or highly likely bird species are priority species common to the Virginia State Wildlife Action Plan and BCR 30 Plan (ACJV 2007). High-priority species that occur on the refuge during breeding season include the bald eagle, prothonotary warbler, northern bobwhite, grasshopper sparrow, Louisiana waterthrush, and barn owl (ACJV 2007, VDGIF 2005). An active long-term program to study prothonotary warbler in partnership with Virginia Commonwealth University (VCU) is described below. Refer to appendix A for the refuge's comprehensive list of species of conservation concern.

#### *Waterfowl*

Presquile NWR was established to provide a resting and feeding area for thousands of migrating Canada geese and other waterfowl that winter in the area. The tidal tributaries of the lower Chesapeake Bay are especially important wintering grounds for waterfowl. In support of the refuge's purpose, the Secretary of the Interior designated certain lands and waters adjacent to Presquile NWR as areas closed to waterfowl hunting under the Migratory Bird Treaty Act as of April 22, 1954 (19 FR 2592). The bounds of the closed area were altered in a subsequent order published in the *Federal Register* on August 19, 1954 (19 FR 5290; codified at 50 CFR 32.8). The areas as described in the August 19, 1954 order remain closed to waterfowl hunting today, which includes, "All the area of the bed of the James River, submerged or exposed, including the waters thereof, in Charles City and Henrico Counties, Virginia, immediately contiguous to and abutting upon lands of the United States (Presquile National Wildlife Refuge)." Additional detail related to the bounds is provided in the order (19 FR 5290-5291).



USFWS

*American black duck*

The refuge has historically provided important wintering habitat along the Atlantic Flyway for wintering Canada geese (as many as 3,000) that breed along James Bay in eastern Canada. Canada geese are decreasing on the refuge as the grassland habitat becomes taller and shrubbier. Based on banding data, migratory Canada geese from the Southern James Bay have decreased substantially in the past 10 years (most of the geese using the refuge were from this region), while resident geese have been increasing in the surrounding agricultural landscape (Talbot and Ducey 2006).

VDGIF conducts aerial mid-winter waterfowl surveys throughout the Chesapeake Bay and its tributaries. The following information is based on 9 years of data, from 1998 to 2009 and pertains to a stretch of the river within 5 miles of the refuge. In parenthesis are the high counts for each species. The most dominant dabbling ducks are mallards (2,000) and American black ducks (1,300). Among the divers, the most numerous are ring-necked ducks (1,700) and merganser (3,000).

Among the geese and swan species, the most common species include Canada geese (over 8,000), snow geese (1,200) and tundra swans (5,400). During the 1998 to 2009 survey period, the highest waterfowl count was in the year 2004, with Canada goose accounting for over 8,000 of the total 10,752 waterfowl (VDGIF 2009).

In addition to the mid-winter waterfowl surveys flown by the VDGIF, the Christmas Bird Count also has provided some on-the-ground visual observations of waterfowl. Of the 30 species in the compiled 1997 to 2006 Christmas Bird Count, the most dominant included Canada goose, snow goose (white and blue phases), ring-necked duck, mallard, American black duck, double-crested cormorant, hooded merganser, lesser scaup, gadwall, and bufflehead. Table 3.12 below presents the full list of waterfowl observed for this 9-year period in alphabetical order. Any of these species may occur in nearby Curles Neck, Deep Bottom Creek, the tidal swamp forest, the emergent wetlands to the north and southeast, or rafting within the Proclamation Boundary just off the refuge's river

shoreline. Conservation status is presented for both BCR 30 and Virginia Wildlife Action Plan lists.

**Table 3.12. Waterfowl Species Observed during the Christmas Bird Count 1997 to 2006**

Species	Season of Occurrence <sup>1</sup>	BCR 30 Priority Status	Virginia Wildlife Action Plan Tier <sup>2</sup>
American black duck	M, W, possible breeder	Highest	II
American wigeon	M, W	Moderate	
Blue-winged teal	M, W	High	
Bufflehead	M, W		
Cackling goose	M, W		
Canada goose	M, W		
Canvasback	M, W	High	
Common loon	M, W		
Common merganser	M, W		
Gadwall	M, W		
Greater scaup	M, W	High	IV
Green-winged teal	M, W		
Hooded merganser	M, W		
Lesser scaup	M, W		
Mallard	M, W		
Northern pintail	M, W		
Northern shoveler	M, W		
Red-breasted merganser	M, W		
Redhead	M, W		III
Ring-necked duck	M, W		
Ross's goose	M, W		
Ruddy duck	M, W		
Snow goose	M, W		
Surf scoter	M, W		
Tundra swan	M, W		
Wood duck	B, M, W		

<sup>1</sup> B = Breeding; M = Migrant; and W = Winter

<sup>2</sup> Virginia Wildlife Action Plan Tiers: I = Critical Conservation Need; II = Very High Conservation Need; III = High Conservation Need; and IV = Moderate Conservation Need

The refuge also provides important wintering habitat along the Atlantic Flyway for American black ducks. Populations of American black ducks have declined by as much as 60 percent on the wintering grounds and continue to be a species

of management concern (Steiner 1984, Whitman and Meredith 1987). Presquile NWR is among the sites participating in a 5-year (2010 to 2014) pilot population monitoring study being conducted by VDGIF. This pilot study was designed to assess differences in vital rates between black ducks banded during the pre-season and post season. Results of the study will be combined with results of the Mid-Winter Inventory and Eastern Breeding Waterfowl Survey to inform adaptive management actions and allow researchers and managers to assess model predictions, evaluate responses of black ducks to management, and track progress towards achieving the goals of the NAWMP (Costanzo 2012).

*Shorebirds*

Compared to the outer coastal plain, relatively few species of shorebirds use the more inland habitats of the James River watershed. Seven species of shorebirds of conservation concern (BCR 30 list) may occur on the refuge at various times of the year. The most familiar shorebirds in the refuge area are killdeer, American woodcock, and spotted sandpiper.

Six species of shorebirds were observed during the 1997 to 2006 Christmas Bird Count: killdeer, Wilson’s snipe, least sandpiper, American woodcock, dunlin, and greater yellowlegs. The refuge supports a small amount of habitat suitable for these species: the narrow beaches and mudflats on the refuge shoreline, early succession and moist bottomlands, or emergent marshes to the north and southeast of the refuge. Woodcock are on the highest priority tier of the BCR 30 list, and are listed as being of very high conservation need (tier II) in the Virginia Wildlife Action Plan. Dunlins are listed as high on the BCR 30 list, and as of moderate conservation need (tier IV) in the Virginia Wildlife Action Plan.

*Waterbirds and Marshbirds*

Thirteen species of waterbirds and marshbirds were observed during the 1997 to 2006 Christmas Bird Count and included priority species such as American bittern, green heron, and Forster’s tern. Ring-billed gull, laughing gull, herring gull, and great blue heron were observed in greatest numbers. As many as 284 great blue herons were counted within the circle in 1998 and the Lower James River Important Bird Area is known for several great blue heron rookeries along this portion of the river. During a 2003 colonial waterbird survey, researchers from the Center for Conservation Biology documented 557 active great blue heron nests and 10 great egret nests at four sites in the Curles Neck vicinity, located immediately west of the refuge (Harding personal communication 2012).

The list of waterbirds and marshbirds that have been observed within the Christmas Bird Count or are possible at the refuge are listed in table 3.13. Their season of occurrence and conservation status, where applicable, is also given.

**Table 3.13. Waterbird or Marshbird Species Observed During 1997 to 2006 Christmas Bird Count**

Species	Season of Occurrence <sup>1</sup>	BCR 30 Priority Status	Virginia State Wildlife Action Plan Tiers <sup>2</sup>
American bittern	B?,M,W	Moderate	II
American coot			
Bonaparte’s gull			
Forster’s tern	B, M	High	IV
Double-crested cormorant	M,W		
Great blue heron			
Great egret			

Species	Season of Occurrence <sup>1</sup>	BCR 30 Priority Status	Virginia State Wildlife Action Plan Tiers <sup>2</sup>
Greater black-backed gull			
Green heron			IV
Horned grebe	M,W	High	
Herring gull			
Laughing gull			
Lesser black-backed gull			
Pied-billed grebe	M,W		
Ring-billed gull			
Virginia rail			IV

<sup>1</sup> B = Breeding; M = Migrant; and W = Winter (BCR 30 Plan 2007)

<sup>2</sup> Virginia Wildlife Action Plan Tiers: I = Critical Conservation Need, II = Very High Conservation Need, III = High Conservation Need, and IV = Moderate Conservation Need

#### *Landbirds*

From the breeding landbird point count surveys from 2000 to 2004, 61 species of birds, primarily landbirds, were found to be breeding within the boundaries of the refuge, including those mentioned above. The most abundant breeding species (combined for all years) are indigo bunting, European starling, prothonotary warbler, grasshopper sparrow, northern cardinal, American goldfinch, and blue-gray gnatcatcher.

Table 3.14 below shows 21 landbirds that are BCR 30 priority species (2007), have Virginia Wildlife Action Plan tier categories, and have been observed or are likely to occur during the breeding season at the refuge. Their season of occurrence is also given.

The Christmas Bird Count records for 2004 to 2006 indicate the following as dominant species of landbirds during the early winter period: red-winged blackbird, European starling song sparrow, American robin, savannah sparrow, mourning dove, northern cardinal, white-throated sparrow, and eastern bluebird. In addition, raptors, such as northern harrier and red-shouldered hawk are easily observed in the winter months.

**Table 3.14. BCR 30 and Virginia Wildlife Action Plan Landbird Priority Species Known or Suspected at Presquile NWR**

Species	Season of Occurrence <sup>1</sup>	BCR 30 Priority Status	Virginia Wildlife Action Plan Tier <sup>2</sup>
Bald eagle	B, M,W	Moderate	II
Black and white warbler	B,M	High	IV
Brown thrasher	B, M	High	IV
Chimney swift	B, M	High	IV
Eastern kingbird	B, M	High	IV
Eastern towhee	B, M	High	IV
Field sparrow	B,M,W	High	IV

Species	Season of Occurrence <sup>1</sup>	BCR 30 Priority Status	Virginia Wildlife Action Plan Tier <sup>2</sup>
Grasshopper sparrow	B, M	Moderate	IV
Gray catbird	B, W	Moderate	IV
Kentucky warbler	B, M	High	IV
Louisiana waterthrush	B, M	High	IV
Northern bobwhite	B, W	High	IV
Prairie warbler	B, M	Highest	IV
Prothonotary warbler	B, M	High	IV
Rusty blackbird	M, W	High	IV
Scarlet tanager	B, M	High	IV
Whip-poor-will	B, M	High	IV
Willow flycatcher	M	High	IV
Wood thrush	B, M	Highest	IV
Worm-eating warbler	B?, M	High	IV
Yellow-throated vireo	B, M	High	IV

<sup>1</sup> B = Breeding; M = Migrant; and W = winter

<sup>2</sup> Virginia Wildlife Action Plan Tiers: I = Critical Conservation Need; II = Very High Conservation Need; III = High Conservation Need; and IV = Moderate Conservation Need

*Bald Eagle.* The bald eagle was removed from the Federal list of threatened and endangered species in July 2007. However, it is important to note that the bald eagle is still afforded special protection through the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act, and retains its threatened status under the Virginia Endangered Species Act. The bald eagle currently is globally secure, is imperiled to uncommon as a breeding species and rare to uncommon as a non-breeder in Virginia, and remains State threatened. The Virginia Wildlife Action Plan lists the species as being of very high conservation need (tier II) as it occurs within a very limited distribution (VDGIF 2005). The Chesapeake Bay-Virginia bald eagle population favors mature, supercanopy trees that overlook a broad expanse of marsh, river, or fields with relatively clear understory below and in close proximity to water bodies where fish are abundant. In Virginia, bald eagles more frequently use pines, but nests are also found in beeches and bald cypress. Pines, hardwoods, or snags with extended branches free of obstructing vegetation are favored for perches. The forested riparian habitats along the tidal portion of the James River and the abundant fish made this area ideal bald eagle habitat (USFWS 2007b).

Presquile NWR occurs within the summer and winter concentration area for bald eagles along the James River watershed (VDGIF 2008b). Bald eagles nest, roost, and winter on refuge lands. Known nests include one along the northwest edge and one along the southeast edge of the refuge. Protecting and enhancing their habitat on the river is a priority on this refuge.



The refuge observes measures to limit disturbance to nests during the breeding season and roosts and important forage areas during the year. The Service and VDGIF have developed general guidelines to protect bald eagles at various times of the year. During the nesting season (December 15 to July 15), restrictions for human activity include buffer zones of 1,320 feet around nests, while restrictions for timber cutting and any other disruptive operations are designated from October 1 through February 28 (USFWS 2003). Also, prescribed burns are conducted at times when there will be the least impact on wildlife, especially for eagles. Spring and summer burns occur prior to, or after, the prime nesting season for ground-nesting birds, and a 750-foot buffer is maintained away from eagle nesting trees (USFWS 2004).

Visitors on the refuge are restricted from certain areas surrounding the known nest sites during the breeding season, as well as sensitive areas during the wintering season. Without such restrictions, eagles may abandon their nests and young during the breeding season and may experience additional stress and mortality during the wintering season.

During the past several years, one or two eagle nests have been active within the refuge. Statewide, annual surveys have been conducted for breeding bald eagles by the Center for Conservation Biology at the College of William and Mary since 1977. A total of 560 bald eagle nesting territories were determined to be occupied in Virginia during the 2007 breeding season (Watts and Byrd 2007). When compared to 2006, this represents a 15.5 percent increase in the breeding population, and a 28.7 percent increase since 2003. Within the James River watershed, active eagle nests increased 4 percent from 2006 to 2007, and a 51 percent increase since 2003. Chick production of 1.88 per nest in 2007 was up slightly from 1.83 per nest in 2006, and was a notable increase from 1.65 per nest in 2003. Within Chesterfield County, active nests increased from 5 to 10 and chick production was more or less steady at 8 in 2003 and 2007 (Watts and Byrd 2003, 2006, and 2007). During the 2010 breeding season, the annual survey documented 684 occupied territories in Virginia. This number represents an 11.8 percent increase over 2009. The number of active nests increased by 10.2 percent and 136 new nests were mapped. Occupied territories were located within 47 counties and 10 independent cities.

The majority of known territories continue to be concentrated within the coastal plain with less than 5 percent of pairs occurring in the piedmont and mountains. A total of 883 chicks were counted during the productivity flight. This is the highest chick production recorded during the 34-year history of the survey. The Virginia population continues to have tremendous reproductive momentum. Of 10,092 chicks documented in the past 34 years, 8.7 percent were produced in 2010 and 70.7 percent were produced since 2000 (Watts and Byrd 2010). Within Chesterfield County, there were 11 occupied territories, 11 active nests, 14 chicks produced, and 1.27 chicks per active nest (Watts and Byrd 2010). At the James River level, there were 133 occupied territories, 126 active nests, 199 chicks produced, and 1.58 chicks per active nest (Watts and Byrd 2010).

*Prothonotary Warbler.* The prothonotary warbler is one of the species that led to the nomination of the Lower James River Important Bird Area (Audubon VA IBA Program 2007). The prothonotary warbler is the only wood warbler in the eastern U.S. that breeds in tree cavities. The species is declining over much of its breeding range, from Florida north to Wisconsin. Because of its specific breeding habitat needs (Flaspohler 1996), the greatest threat to this bird in Virginia and the southeastern U.S. is destruction and degradation of habitat and the conversion of lowland forests by logging and agricultural practices (Petit 1999). The prothonotary warbler prefers lowland forests near standing water for nesting sites and, in Virginia, is primarily found along the tidal portions of rivers that flow into the Chesapeake Bay, including the James River. Natural



Daniel Lay

*Prothonotary warbler chick*

nest cavities used by the prothonotary warbler are those excavated by woodpeckers and other cavity builders, although nest boxes supplied by humans are readily occupied.

Since 1987, the VCU Department of Biology has conducted annual breeding studies of prothonotary warblers at Presquile NWR. Initially, the primary study question to address was whether a major contributor to their population decline was habitat destruction and fragmentation on their breeding grounds, causing a lack of nesting substrate and high predation and parasitism rates (Viverette personal communication 2012). To study this question, a nest box program was instituted to study productivity, produce large numbers of fledglings, and offer better protection from predation and parasitism through vigilant

observations and monitoring. The research questions have since expanded beyond this as evidenced by more than 20 publications that have resulted. Some of the findings are presented below.

Over the years, as many as 283 nest boxes were placed to facilitate research, primarily along the two internal channels and streams on the refuge. Presently, the number of nest boxes is approximately 150 (Viverette personal communication 2012); however, recent discussions with refuge staff involve consideration of a further reduction to reduce maintenance needs and encourage bird use of natural cavities. The boxes allow easy access to the birds, in particular the nestlings and adult females, allowing researchers to follow each stage of nesting and development and easily capture and handle birds (e.g., for banding and collecting tissue samples such as blood samples for genetic or blood parasite work, and feather samples for isotope work). The large number of boxes at multiple sites allows a level of experimental control, and sufficient numbers for statistical analysis, that is unusual in many avian studies. Researchers would not be able to reproduce the kinds of research that has been, or is being conducted, using natural cavities. The kind of access and experimental control, as well as large sample sizes, is particularly important to students conducting master thesis research because they have a short window of time to conduct the research. In addition, over many years, this access has provided a robust long-term data set. Being able to follow individual birds over multiple years is particularly important for studies currently underway relating to a host of questions about individual fitness, as well as habitat connectivity.

Nest boxes are typically placed at 3 to 6.5 feet above the highest high tide and are spaced approximately 330 feet apart. During the breeding season (April to July), nest box activities include monitoring for nestling activity, as well as weighing, measuring, and banding, and taking blood samples to look for parasites and mercury levels.

Data obtained during VCU studies done on the refuge from 1987 through 2003 indicate an average number of adult females banded per breeding season was 26.5 from 1987 through 1994, while from 1995 through 2003 it was 74.2 (a 280 percent increase). Similarly, the average number of young birds annually banded was 91.9 from 1987 through 1994, while from 1995 through 2003 it was 611.5 (a 665 percent increase). Except for the spring of 2003 when over 100 nests were abandoned with eggs present (Blem and Reilly personal communication 2003), nest abandonment has not been an issue during banding studies (but predation by predators and subsequent nest abandonment may be a contributing factor in the species decline elsewhere throughout their range). The most frequent

number of eggs per early clutch was 5 (61 percent of all nests), while for late clutches it was 4 (69 percent of all nests). Early clutches varied from 3 to 7 eggs, while late clutches varied from 2 to 7 eggs. The date of first egg laying (for first clutches) varied from April 17 to April 28. Eggs are laid one per day, and have an incubation period of about 12 days, beginning with the last egg. In regard to nest boxes, 141 were established in 1987, and had increased to 320 boxes by 2003. The number of nests with at least one egg began with 51 in 1987 (36 percent) and was at 303 in 2003 (95 percent). Approximately 12.6 percent of all boxes during the 17-year period produced two nests (Blem and Reilly personal communication 2003).

VCU has also been examining productive success relative to female plumage, as females with plumages most resembling male breeding plumage appear to have higher mating success rates, migration return dates in response to climate change, screening for infectious diseases such as avian influenza and West Nile virus, diet studies using stable isotopes, and characterization of the population structure across small (e.g., the tidal James River) and large geographic areas (e.g., across the breeding range) using microsatellite DNA markers.

The research conducted by VCU has resulted in publication of over 20 manuscripts in scientific journals, 5 graduate theses, and 8 undergraduate research projects. This research has significantly contributed to the body of scientific knowledge about this species' breeding ecology, feeding behaviors, and parasite burden, as well as offering clues about how climate change may affect this species.

*Rusty Blackbird.* Another declining priority species for which the refuge has potential habitat is the rusty blackbird. Their primary habitat is wooded wetlands but they occasionally join large flocks of blackbirds in open fields in the winter. In 2006, 1,054 rusty blackbirds were observed during the Christmas Bird Count near the refuge. However, rusty blackbird populations have been declining by as much as 88 percent in the past few decades according to data gathered between 1966 and 2006 for the North American Breeding Bird Survey and Christmas Bird Counts, prompting a call for a National Rusty Blackbird Blitz in 2010 (eBird 2010). The species is more insectivorous than other blackbirds. Observers suggest that the species is wary of new foods or situations, making it less adaptable than other blackbirds in taking advantage of opportunities. A number of factors may be responsible for their decline on wintering and breeding grounds. In the winter, conversion of up to 80 percent of hardwood bottomlands to agriculture may have forced them into open habitat where they must compete with birds such as common grackles and red-winged blackbirds. The species experienced large losses on their wintering ground because of control programs in the 1960s and 1970s. Some states consider the rusty blackbird as a pest species. Breeding habitat loss and degradation, including boreal wetland drying and changes in water chemistry is due, directly or indirectly, to global warming and changes in the vertebrate community. Other birds associated with boreal wetlands have shown declines also (Greenberg 2010).

#### *Birds and Climate Change*

According to a recent analysis of Christmas Bird Count data over the past 40 years, a significant northward shift of the winter center of abundance is occurring among at least 305 bird species in North America (Niven et al. 2009). Of these bird species, 208 shifted north, with 123 species shifting more than 50 miles. Landbirds shifted more than waterfowl or coastal species. Seventy-five percent of landbirds shifted north an average of 48 miles. Landbirds were further analyzed according to four habitat guilds: woodland, grassland, shrub, and generalist. Woodland birds shifted the most, followed by shrub species, while grassland birds and generalist shifted the least. This study confirmed northward shift of species already suspected, such as red-bellied woodpecker, tufted

titmouse, Carolina wren, and northern cardinal, which are all common species at the refuge throughout the year. It may not be possible to separate climate change influences from forest management influences over the 15-year planning horizon of this document.

Waterfowl range contraction is anticipated as milder, warmer winters shift northward, reducing the need for waterfowl to migrate as far south. Fewer waterfowl now winter in the Chesapeake Bay area, attributed to climatic changes occurring in the breeding grounds of the Prairie Pothole region, milder winters further north, and decline of eelgrass in the bay (from warmer water temperatures, turbidity, and sea level rise) (VDGIF et al. 2009).

Impaired water quality of the James River due to climate change effects such as increase erosion, turbidity, water temperatures, could indirectly affect the bald eagle population by impacting fish, the species' primary prey base.

### Mammals

According to VDGIF and Linzey (1998), approximately 45 to 49 mammal species occur in Chesterfield County (VDGIF 2010). The field mouse is the most abundant mammal species on the refuge and is found in all habitat types. Deer, raccoon, gray squirrel, woodchuck, eastern cottontail rabbit, striped skunk, and muskrat are common mammals for this part of Virginia. Little brown bat, red fox, and American beaver are known to live on the refuge (Jackson et al. 1976, USFWS 2004a) and river otter have been observed on the refuge through use of wildlife cameras. Bobcat and coyote may also be on the island, as they are in the surrounding area, but to date, there have not been any conclusive observations.

Several mammal species of concern potentially occur on Presquile NWR. The cotton mouse is listed as a species of moderate conservation need (tier IV) in the State Wildlife Action Plan and has a range that may include the refuge. The marsh rabbit has been found in Surry County and is also a species of moderate conservation need (tier IV). The southeastern fox squirrel may possibly be extending its range northward; although suitable habitat for this species is not abundant, it is a species



*Raccoon*

Bill Wood

of high conservation need (tier III) in the Wildlife Action Plan. Southeastern myotis is a species of moderate conservation need (tier IV) in the bat family that has potential to occur on the refuge. An individual was recently discovered in Chesterfield County (Hobson personal communication 2010) flying erratically in broad daylight near Pocahontas State Park. It was captured and diagnosed with white-nosed syndrome, rabies, and mites. The Rafinesque eastern big-eared bat is a species of critical conservation need (tier I) which also may occur on or near the refuge, as it has been recorded in several nearby counties (Linzey 1998, VDGIF 2005). More information on bat diversity and distribution in the area of the refuge is needed. Although the refuge has no caves, and likely no rock crevices, a number of bats use hollow trees, clumps of leaves, even Spanish moss for roosting. With so much hardwood bottomland forest and swamp adjacent to marsh and old field and old farm buildings, the refuge likely provides ideal habitat for several bat species.

### Reptiles and Amphibians

The refuge's marsh and swamp habitats are especially rich in reptilian life. Within a 3-mile radius of the refuge, about 79 species of reptiles and amphibians potentially or likely occur (VDGIF 2010). Of these, there are 20 species of frogs

or toads, 14 species of salamanders, 12 turtle species, 26 snake species, and 7 lizard or skink species. Sixteen of the species have State status or are tiered species in the Virginia Wildlife Action Plan, and includes such species as barking treefrog (State-threatened, tier II), northern diamond-backed terrapin (collection concern, tier II), eastern box turtle (tier III), spotted turtle (collection concern, tier III), eastern spadefoot toad (tier IV), and eastern hog-nosed snake (tier IV).



Cyrus Brame/USFWS

*Snapping turtle*

Riparian forests and wetlands along the James River provide excellent breeding and foraging habitat for many species of reptiles and amphibians. Few baseline surveys have been conducted at Presquile NWR, but snapping turtle, brown water snake, eastern painted turtle, and eastern red-eared sliders can easily be found basking on downed logs in the creeks of the tidal swamp forest.

Depending on the time of year, this same swamp would host choruses of green tree

frogs, spring peepers, Fowler's toads, southern leopard frog, and green frog. During a survey for reptiles and amphibians conducted in spring 2006 by the Virginia Herpetological Society, species observed included several black racers, eastern worm snake, eastern garter snake, and most notably, eastern mole king snake. In addition, a five-lined skink, Fowler's toads, and a Cope's gray treefrog were observed.

While conducting the reptile and amphibian survey, the Virginia Herpetological Society examined individual animals for evidence of parasites, infection, or malformities. Of particular note, many of the eastern fence lizards caught were found to be heavily infested with ticks. Also at that time, a snake lesion and blood sampling study was initiated for non-threatened and non-endangered snakes. Researchers placed tin and wood cover boards as well as drift fences, funnel and pitfall traps to capture snakes. Snakes that were captured were analyzed for lesions and biopsied, if appropriate had blood samples taken and were tagged prior to release. This study was prompted by an earlier study conducted at the Rappahannock River Valley NWR in June 2005, where an unusually high incidence of skin lesions and eye infections were noted among several species of snakes. Researchers sought to expand their investigations to James River and Presquile NWRs to determine the extent and find clues for potential causes. No major concerns have been noted to date with populations on Presquile NWR; however, studies are still ongoing (Ware personal communication 2012).

### Fish

At the county level (i.e., Chesterfield County), 59 species of fish are presently listed by VDGIF. Twenty of these species are considered game fish (VDGIF 2010).

Although a complete inventory of fish in the refuge vicinity has not been conducted, these are among the more commonly occurring fish species: white perch, blue catfish, triped bass, largemouth bass, hogchoker, bluegill, pumpkinseed sunfish, and American eel (Spells personal communication 2011).

The following species of fish may find suitable spawning and nursing sites within the James River and the two large creeks that bisect the refuge: bridle shiner, alewife, blueback herring, American shad, gizzard shad, and hickory shad. Small tributaries to the larger creeks and associated wetlands serve as important nursery areas for resident fish species. Other aquatic habitats within the refuge or adjacent to the refuge may be inhabited by other small fish (killifish and mosquitofish) (Spells personal communication 2011).

*Atlantic Sturgeon*

In February 2012, NOAA's Fisheries Service announced the listing of the Chesapeake Bay population and four other distinct populations of Atlantic sturgeon as federally endangered. It is a globally vulnerable species that is imperiled in the State.

According to State fishery biologists, a small but viable sturgeon population occurs in the lower James River (Richmond Times Dispatch, April 15, 2007) and the James River remains one of the best places in the Chesapeake Bay watershed to find sturgeon. There is recent evidence that sturgeon spawning in the James River is occurring in the spring and in the fall (Richmond Times Dispatch, May 3, 2011 and September 26, 2012; Balazik et al. 2012). Scientists netted more than 200 sturgeons between 2005 and 2006, many between Hopewell and Newport News, leading some to speculate that a comeback was underway. An estimated 9-foot sturgeon was briefly captured by VCU biologists just upriver from Hopewell on September 18, 2007 (Richmond Times Dispatch, September 29, 2007). This prompted JRA to partner with State and private entities to construct an artificial spawning reef adjacent to Presquile NWR in 2010. Partner agencies and organizations are conducting ongoing monitoring to evaluate whether or not the artificial reef site is promoting spawning by sturgeon. Other fish species have been noted to use the area for spawning. However, use by sturgeon has not been confirmed to date (Fredrickson personal communication 2011). Refuge staff have also worked with partners involved in the tagging and recapture of sturgeon as well as preliminary studies to investigate potential effects of river channel dredging on the population. An adult female sturgeon was caught in the James River near Presquile NWR in the spring 2012 for the first time in 3 years (Brame personal communication 2011).

*Other Special Status Fish Species*

Alewife (tier IV) and blueback herring were recently proposed for Federal listing as threatened in the *Federal Register* (76 FR 67652) primarily due to concerns with habitat loss, habitat alteration, impaired water quality, and overutilization. According to this *Federal Register* Notice, the substrate preferred for spawning varies greatly and can include gravel, detritus, and SAV. Blueback herring prefer swifter moving waters than alewife.

*American shad*



Duane Raver/USFWS

The bridle shiner (State special concern, tier I) spawns in still shallow water near shore where vegetation is present, such as tidal freshwater marshes (Burkhead and Jenkins 1991, Scott and Crossman 1973).

American shad, gizzard shad, and hickory shad use backwater and slow water areas, such as the side channels and open waters on or adjacent to the Presquile NWR (Manooch 1984, Ross et al. 1993). American shad are also a species of concern in areas of their range. They were historically considered an important food source for American Indians and European settlers (Hilton et al. 2011). A commercial fishery in the

Chesapeake Bay grew, and by 1897, 11.5 million pounds were harvested (Virginia Institute of Marine Science, [http://www.vims.edu/research/departments/fisheries/programs/american\\_shad/index.ph](http://www.vims.edu/research/departments/fisheries/programs/american_shad/index.ph); accessed April 2012). By 1982, less than 1 million pounds were harvested. In 1994, the Virginia Marine Resources Commission issued a moratorium on American shad harvest in the Chesapeake Bay and its tributaries. In addition to overfishing, habitat degradation such as pollution, dams, and land use changes have caused a decrease in the American shad population of the Chesapeake Bay and its tributaries (ASMFC 2007).

Species of fish that are listed in the Virginia Wildlife Action Plan and in the Virginia Fish and Wildlife Information Services Biota of Virginia Database for a 3-mile radius from the refuge are listed in table 3.15. Federal and State status is also included when applicable. A list of potential fish species of conservation concern for the waters around the refuge is provided in the appendix A.

**Table 3.15. Virginia Wildlife Action Plan Fish Species Known or Suspected at Presquile NWR**

Common Name	State and Federal Status <sup>1</sup>	Virginia State Wildlife Action Plan Tier <sup>2</sup>
American Brook Lamprey		IV
Atlantic Sturgeon	FE, SS	II
Alewife		IV
American Shad		IV
American Eel		IV
Banded Sunfish		IV
Bridle Shiner		I
Least Brook Lamprey		IV
Mud Sunfish		IV

<sup>1</sup> FE = Federally Endangered; ST = State Threatened; and SS = State Species of Concern

<sup>2</sup> Virginia Wildlife Action Plan Tiers: I = Critical Conservation Need; II = Very High Conservation Need; III = High Conservation Need; and IV = Moderate Conservation Need

### Invertebrates

This taxon is the least studied and understood group of animals on the refuge. During warmer seasons, the refuge supports a wide range of aquatic insects, butterflies, beetles, and other invertebrate species. Monarch, red admiral, sulphurs, buckeye, painted lady, and eastern tiger swallowtail are some of the more common butterfly species. No rare or listed insect species were collected during the 2002 Natural Heritage Inventory conducted by the VNHP. An insect survey on the refuge in July 17, 2007 yielded 30 species, most of which were butterflies and skippers. Of special interest are the native bees and beetles that were also recorded (Wirth et al. 2007). A diversity of native insects, especially specialists that are associated with a single or only a few plant lineages, is suggestive of a healthy ecosystem. The short list is presented in table 3.16 below.

Two species of shellfish of conservation concern may also occur on or near the refuge: the alewife floater mussel (tier IV) and the green floater mussel (State threatened; tier II).

**Table 3.16. Insecta Collected During July 2007 Survey at Presquile NWR by the University of Richmond**

Category	Family	Common Name
Ants	Mutillidae	Velvet ant
Bees and Wasps	unknown	Small bee
	Apidae	Hibiscus bee
	Megachilidae	Leaf-cutting and resin bees
	Vespidae	Potter wasps
Beetles	Cicindelidae	Sidewalk tiger beetle
	Meloidae	Blister beetle
	Scarabaeidae	Green June beetle
Butterflies	Hesperiidae	Least skipper
		Silver-spotted skipper
		Skipper species
	Lycaenidae	Eastern tailed blue
	Nymphalidae	Red admiral
		American snout
		Pearl crescent
		Silvery checkerspot
		Hackberry emperor
		Variegated fritillary
		Common buckeye
		Monarch
	Papilionidae	Zebra swallowtail
		Spicebush swallowtail
		Pipevine swallowtail
		Black swallowtail
	Pieridae	Checkered white
Orange sulphur		
Cabbage white		
Flies	Unknown	Fly species #1
		Fly species #2
Moths	Erebidae	



*Insect Pests*

During surveys for rare flora by the VNHP in 2001, caterpillars of the tobacco budworm were found foraging on the federally threatened sensitive joint-vetch in the northern marshes of the refuge (Belden et al. 2002). Also, the gypsy moth, which can defoliate numerous species of trees, occurs in Chesterfield County and may occur at the refuge. However, complete stand defoliation occurs only in western Virginia, according to the Virginia Department of Forestry (email communication with Brian Lacey, November 2007).

The Asian longhorn beetle is believed to have been introduced into the U.S. from wood pallets and other wood packing material. It burrows into and kills maples, birch, elm, and other trees. Maples make up the largest percentage of the landscape trees in Virginia and it is very likely that it will arrive in the State at some point.

The most serious pest threatening Virginia's forests at this time is the emerald ash borer. The larvae of the beetles feed on the inner bark of ash trees and kill them. Emerald ash borer was discovered in northern Virginia in 2008. Green ash is a dominant tree species in the tidal swamp forest at Presquile NWR.

Southern pine beetle is another serious native insect pests in southern forests. The beetles lay eggs under the bark of pine trees. When the larvae hatch, they tunnel and feed just under the bark of the tree. This movement cuts off the flow of water up the tree causing the tree to die. The beetle population can increase dramatically during warm weather and quickly kill many acres of pines. Pine is not a dominant species at Presquile NWR and exists as scattered individuals, not in pure stands (VDOT 2010). The current low abundance of pine on the refuge should result in a low risk of a beetle infestation; however, as previously mentioned in other sections, changes in forest cover resulting from changes in management or global climate change may result in an increased abundance of pine.

**Climate Change Impacts on Wildlife Resources**

Climate change will have a range of effects on vegetation and ecological systems and the biological resources that depend on them. That landbirds are already exhibiting shifts in their winter centers of abundances or that some migrants are possibly returning earlier in the season has already been discussed. The possibilities for change in invertebrate fauna in response to climate change are poorly understood. This is particularly true for pollinators and their larvae, in the absence of a complete understanding in prospective changes in the species composition and distribution of their host plants. It is expected that species ranges will shift northward or toward higher elevations as temperatures rise, but responses will likely be highly variable depending on species or taxonomic group. Under these rapidly changing conditions, migration, not evolution, will determine which species are able to survive. Species that cannot migrate will suffer the most. For example, plants, mussels, amphibians—species that are vulnerable to temperature shifts—may be affected in their ability to survive, grow, and reproduce.

The Virginia Climate Change Strategy for Species of Greatest Conservation Need predicts that there will be significant challenges for species of greatest conservation need species. Over 60 percent of species of greatest conservation need are aquatic and another 15 to 20 percent rely on riparian and wetland habitats. Sediment load and increased turbidity in the James River, as well as increased inputs of herbicides, fungicides, and insecticides are anticipated (VDGIF et al. 2009). Since Presquile NWR is an island, the buffering effect against climate change provided by contiguous connection with adjacent habitat is not available to non-mobile species.

Four types of responses by animal and plant species are possible. First, the density of species may change locally and their ranges may shift in response to the need to find areas within their range of tolerance. Second, there will likely be changes in phenology, or the timing of such important life history events as flowering, egg-laying, and migration. Third, changes in body sizes and behaviors may occur. And fourthly, genetic frequencies may shift. In a study that investigated 61 studies on phenology changes of 694 species over the past 50 years, a statistically significant shift toward earlier timing of spring events was evident. An example species is the North American common murre, which has been breeding 24 days earlier per decade (Root et al. 2003) or the prothonotary warbler, which has been returning earlier. Data collected over the last 21 years of VCU study indicate that male prothonotary warblers are arriving to the refuge earlier in the breeding season (an average of 1 day per year) and the earlier arrival dates are correlated with a rise in average atmospheric temperature on the breeding grounds. Earlier arrival dates may be associated with occupation of better territories and a higher probability of breeding with multiple females (Blem et al. 2007).

Species with short generation times, such as insects and annual plants, might be helped in adapting to change because of their more rapid evolution. Longer-lived species such as trees, would experience longer evolution timeframes and thus be less adaptable (Rogers and McCarty no date specified). Since so many animal species time important events in their life cycles, particularly reproduction, so that young are produced when food sources are available, changes in other phenological events such as flowering or insect hatching, could be disastrous for species that fail to adapt in time. At this writing, it cannot be predicted how this will play out at Presquile NWR, but management should seek to provide biologically diverse habitats and connected corridors to provide a diverse species pool that can utilize the refuge habitat and increase the refuge's resilience to climate change.

#### **Special Status Wildlife Species Surveys and Potential for Detection at Presquile NWR**

In 2001, the VNHP conducted a zoological inventory at the refuge for targeted rare species. Targeted species for the zoological inventory included barking treefrog, yellow lampmussel, Ohio shrimp, rare skipper, glossy crayfish snake, and tidewater interstitial amphipod, and various insects of varying conservation ranks (see Belden et al. 2002 for complete lists). During surveys, two rare odonata formerly listed on the VNHP Heritage Watch list were collected. The blue dragonlet was collected in a ponded section of a small tributary to Flowerdew Hundred Creek, near the James River NWR. The big bluet damselfly was found to be common and was collected along the vegetated banks of Powell Creek at the James River NWR (Belden et al. 2002). These locations are close to Presquile NWR.

Two of the rare species above are known for Chesterfield County: barking treefrog and yellow lampmussel.

The barking treefrog is globally secure, is critically imperiled in Virginia, and is State threatened and is listed as being of very high conservation need (tier II) in the State's Wildlife Action Plan. This species inhabits sandy areas near shallow ponds in pine savannas and low wet woods or swamps (Martof et al. 1980). Although such habitat exists within the refuge, the refuge occurs along the extreme northern edge of the species' range, and consequently its possible presence is limited.

The yellow lampmussel is globally secure to very rare, is imperiled in Virginia, and is also a State special concern species. It inhabits shifting sands downstream from large boulders in relatively fast flowing, medium-sized rivers and medium

to large creeks and suitable habitat appears to be present within and adjacent to the refuge. Although recorded in Chesterfield County (NatureServe April 2010), it is also noted as extirpated or possibly extirpated.

The Rafinesque eastern big eared bat is a species of critical conservation need (State endangered; tier I) in the Virginia Wildlife Action Plan for the coastal plain. It is globally vulnerable to secure and State rare, as it has never been an abundant species. It is documented in nearby counties (Sussex and James City) with the core of the Virginia population occurring closer to the North Carolina border. It prefers forested wetlands and its main foods are moths. Essential habitat for roosting is hollow trees in wooded areas and mature hardwood floodplain forests, which the refuge does supply in modest quantity. More information is needed on the bat community of the Presquile NWR (<http://www.natureserve.org>; accessed April 2010) (VDGIF 2005).

Spotted turtle and eastern box turtle are listed as species of high conservation need (tier III) in the Virginia Wildlife Action Plan (high conservation need, extinction or extirpation possible). These two species are locally common in this part of Virginia but have not been documented on the refuge. The eastern box turtle, an upland forest species, faces considerable habitat fragmentation throughout its range.

The peregrine falcon, delisted from federally endangered status in 1999, is globally secure, critically imperiled as a breeding species and very rare/imperiled as a migrant in Virginia, and is State threatened. This predatory bird nests on cliff faces and tall buildings, and such breeding habitat does not occur within the refuge, although they have occasionally nested under bridges crossing tidal rivers. Foraging habitat is available around Presquile NWR.

The loggerhead shrike is globally secure, is uncommon to very rare as a breeding bird and uncommon to rare as a migrant in Virginia, and is State threatened. The species is a very rare permanent resident at the western edge of the coastal plain and even rarer further east. Two individuals were recorded during the 1997 and 1998 Christmas Bird Counts. Formerly a widespread breeder, breeding has been confined to one to two pairs at Fort Lee in Prince George county, where nesting was confirmed in 1997 and 1998 (Rottenborn and Brinkley 2007). This predatory songbird inhabits open grasslands with scattered trees, especially those bearing thorns, or meadows surrounded by barbed-wire fencing to cache their prey. The grasslands on Presquile NWR and surrounding landscape currently provide suitable habitat.

### 3.12 Cultural Resources

A comprehensive evaluation of the cultural and historic resources of the refuge, and an assessment of the overall archaeological sensitivity of the refuge lands, concluded that Presquile NWR has a high potential for preserved significant archaeological resources that could advance our understanding of Virginia's

human history (Goode et al. 2009). These resources include site components associated with American Indian settlement and subsistence, initial settlement of the James River by Europeans, Plantation society, military history, and post-Civil War rural agriculture. Six known archeological sites, the location of a farmstead complex dating from the 17th through 20th centuries with archaeological potential, and a large area with high probability of use by American Indians have been identified within the refuge.

The National Historic Preservation Act (Sec. 106) requires us to consider the potential effects of proposed actions on sites that are included in (or are eligible for inclusion in) the National Register. We also consider potential impacts to sites that probably exist, but have not yet been recorded.



Meghan Carfoglio/USFWS

*Bunkhouse construction site*

### 3.12.1 Archaeological Resources and Collections

The diversity of archaeological evidence at Presquile NWR contributes to further understanding of Virginia's human history. Although no large archaeological investigations have been undertaken within the Presquile NWR, six small archaeological sites have been investigated. Five of these six sites were identified or investigated by Edward F. Heite, during his 1967 study of Bermuda Hundred (Goode et al. 2009). Most recently, the Service conducted an archaeological Phase I locational survey at the site of the proposed bunkhouse (Binzen et al. 2011). This survey discovered a previously unrecorded portion of an already documented archaeological site (Site 44CF120). The Service and Virginia Department of Historic Resources curate the refuge's cultural resource artifacts and document collections.

### 3.12.2 National Register Eligible Properties

The National Register is composed of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering, and culture. The National Register defines an archaeological site as "the place or places where the remnants of a past culture survive in a physical context that allows for the interpretation of these remains" (Little et al. 2000). Such properties may meet criteria for inclusion in the National Register for a variety of reasons, not the least of which may be because "they have yielded, or may be likely to yield, information important to prehistory or history" (National Register Criteria for Evaluation, 36 CFR 60.4). Below we describe two historic sites of concern on the refuge that may be affected by our proposed actions:

- (1) *Multiple Property Listing, "Prehistoric through Historic Archaeological Resources and Architectural Resources at Bermuda Hundred."* In 2006, Presquile NWR was placed on the National Register as part of a multiple property listing: Prehistoric through Historic Archaeological Resources and Architectural Resources at Bermuda Hundred (VDHR file #020-5370).
- (2) *Archaeological Site 44CF120, "Presquile House Archaeological Site and Cemetery."* Although the overall boundaries of the archaeological site are not known, the site is believed to be very large and complex. It includes the location of a former 17th to 19th century plantation and a 20th century farm complex. The site contains a remnant of a terraced orchard or garden situated northeast of the location of the former house. One of these terraces is also the location of the cemetery which contains four headstones, three of them inscribed with dates from 1797 to 1858. The remains of the Presquile House Site and Cemetery have a historic structure designation (although none of the historic buildings remain). This site is potentially eligible for listing on the National Register.

The recent Phase I archaeological survey at the proposed bunkhouse construction site discovered a previously unrecorded portion of Site 44CF120. The bunkhouse construction would occur within the former orchard portion of this property (Binzen personal communications 2012). The Service's Regional Historic Preservation Officer (RHPO) and the SHPO concurred that the proposed construction of the bunkhouse would have no adverse effect on this potentially eligible National Register property (USFWS 2011).

It is likely that many additional, unrecorded archaeological sites exist at Presquile NWR, awaiting identification. When an action is proposed in an area of archaeological sensitivity, it may be necessary to perform an archaeological investigation to locate any archaeological sites that may be present, and to evaluate their eligibility for the National Register.

### 3.12.3 Indigenous Cultural Landscapes

#### Indigenous Cultural Landscape

Presquile NWR is a good example of a new concept of place known as an "indigenous cultural landscape" (Beacham personal communication 2011). Developed during planning for the Captain John Smith Chesapeake NHT,

the concept is intended to represent large landscapes from the perspective of American Indian nations at the time of their first contact with Europeans. The indigenous cultural landscapes identified in the Chesapeake Bay area still have many of the cultural and natural resources that would have supported the historic lifestyles and settlement patterns of American Indian peoples in their totality. The concept also attempts to demonstrate that American Indian places were not confined to the sites of houses, towns, or settlements. It emphasizes that the American Indian view of one's homeland is holistic rather than compartmentalized into the discrete site elements typically described by European-descended peoples as "hunting grounds," "villages," or "sacred sites." More on this concept is described in appendix Q of the final Comprehensive Management Plan/EA for the Captain John Smith Chesapeake NHT (<http://parkplanning.nps.gov/CAJO>; accessed April 2012).

The conclusion that Presquile NWR exemplifies an indigenous cultural landscape is supported by the presence of several pre-contact archaeological sites, documentation by John Smith during the early 1600s about the Appamattuck territory, and persistence of landscape elements that supported American Indian communities. The good agricultural soil, sources of fresh water, transportation routes on the river, accessible landing places, marshes, brushy areas, and mixed deciduous forest were all central elements that supported American Indian communities for centuries prior to and following European settlement. Interpretation of the refuge as an indigenous cultural landscape is wholly consistent with the Service mission "to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people," which includes Native Indian peoples independent of Federal or State recognition.



Cyrus Brame/USFWS

*Indigenous cultural landscape of Little Creek*

#### **European Settlement and Plantation Landscape**

Topographic features associated with the plantation society and dairy farming are evident today at Presquile NWR. The pastoral scene in the refuge's uplands includes a few tall trees and farmstead buildings surrounded by mown lawn. The surroundings offer expansive and unobstructed views of the grasslands, bounded by tall swamp forest trees in the distance to the north and east; riparian buffer planting that stabilize the shoreline and obscure views of industrial buildings in Hopewell, Virginia to the south; the crest of a forested slope to the west; and

open sky. The scenery creates a feeling of having traveled back in time, while a few reminders of modern times keep the visitor grounded in the present. Modern elements of the scenery include the Menenak Discovery Center with a solar panel array and bunkhouse; occasional commercial aircraft flying overhead; and the sights, noises, and odors associated with nearby industrial plants which are occasionally noticeable from certain locations on the refuge.

#### **Landscapes Evocative of the 17th Century**

Presquile NWR's indigenous cultural landscape combines with the European settlement and plantation landscape to be evocative of the 17th century. Together, the feeling of the world Captain John Smith encountered as he explored the Chesapeake and Europeans began establishing settlements exists where modern intrusions of sight, sound, and odors are largely absent. Such places are increasingly rare and offer limited opportunities for public access.

With assistance from the Tribal organizations, NPS, and JRA, we have begun weaving cultural resources and history into our refuge's natural resource stories through our educational and interpretive communications. We aim to promote a deeper understanding of America's diverse peoples and to inspire refuge stewardship by telling a more complete story of the area's significance in the past, present, and future.

### **3.13 Public Uses**

This section describes the public access, education, and recreation opportunities at Presquile NWR. Recreation features and access points on the refuge are available from the refuge Web site (<http://www.fws.gov/northeast/Presquile>; accessed September 2012). The most recent public use management plan for Presquile NWR was prepared by the Service in 1994.

During the 1980s, three full-time employees and one part-time employee administered activities and facilitated visits by ferrying approximately 2,600 people to the refuge annually. In recent years, only one full-time employee has been administering activities and facilitating visits to Presquile NWR, as well as at James River NWR and Plum Tree Island NWR. In 2001, the U.S. Coast Guard deemed the ferry unsafe for continued transportation of the public to Presquile NWR. Refuge visitation has declined to approximately 400 people annually due to reductions in refuge staff, budget, and transportation capabilities.

Six priority public uses were identified by the Refuge Administration Act: wildlife observation, photography, environmental education, interpretation, hunting, and fishing. In accordance with the Refuge Administration Act and Service policy, these uses receive enhanced consideration over general public uses in the Refuge System.

#### **3.13.1 Wildlife Observation, Photography, Environmental Education, and Interpretation**

The refuge opened to organized groups (e.g., school, civic, and church groups) for walking the nature trail, wildlife observation, and photography in 1973 (38 FR 13563; codified in 50 CFR 28.28). Since its opening, these public uses have been found to be appropriate and compatible. We recently updated the compatibility determination for these uses. The compatibility determination includes stipulations to ensure compatibility, including the requirement to coordinate and schedule visits with refuge staff. The approved compatibility determination is included in appendix B of this CCP.

Between 1977 and 1988, an average of 2,068 visitors participated in these uses annually. Decommissioning of the ferry for visitor transport combined with the reallocation of refuge budget, staff, and priorities resulted in a substantial drop in refuge visitation. Between 2007 and 2011, an average of only 307 visitors

participated in these uses annually. In recent years, we have received fewer than 30 annual requests from individuals or small groups to visit the refuge. We offer up to six pontoon trips to and around the refuge annually; up to 96 individuals participate in these trips. Approximately 300 additional visitor contacts are made when we participate in off-refuge community and civic events, as well as on-refuge volunteer events. Each of the events and programs on-refuge fills quickly.

In an attempt to reverse the declining refuge visitation, we have been collaborating with JRA for the past 5 years. Together, we are able to offer high-quality environmental education programs at Presquile NWR. Since 2007, the JRA has led environmental education programs for approximately 120 school-aged students each year. A Visitor Services Review for Presquile NWR (USFWS 2010b) recommended that we proceed to expand opportunities for wildlife observation, photography, environmental education, and interpretation through our partnership with the JRA.

No formal visitor satisfaction surveys have been conducted for these uses at Presquile NWR. However, some visitors voluntarily provide feedback, which the refuge uses to improve communications and update programming. The majority of visitors have expressed to us that their visit was very enjoyable and satisfying because they had the opportunity to immerse themselves in a natural setting, with few to no encounters with other people.

#### **The JRA Partnership for the Ecology School at Presquile NWR**

The JRA is the oldest and largest river conservation group in Virginia and is the only nonprofit organization solely dedicated to protecting and restoring the James River. The mission of the JRA is to be the guardian of the James River by promoting conservation and responsible stewardship of its natural resources.

In 2006, we began working with the JRA to create the Ecology School, a residential environmental education program on the refuge. The Ecology School offers students a welcoming, safe, and accessible environmental education program that incorporates a variety of hands-on opportunities to enjoy, learn about, appreciate, and participate in efforts to conserve America's wildlife, with a special emphasis on the Chesapeake Bay and the James River watershed. Facilities that support operation of the Ecology School at Presquile NWR include the environmental education center, bunkhouse (construction initiated in summer 2012), tidal swamp forest boardwalk, trail network, observation platform, and boat docks.

In 2007, we signed an MOU with the JRA detailing our mutual conservation goals and environmental education objectives. Our partnership with JRA to establish the Ecology School exemplifies the Service's commitment to fulfilling the goals of President Obama's *America's Great Outdoors Initiative*, Executive Order 13508: *Chesapeake Bay Protection and Restoration*, and the Refuge System's renewed vision, detailed in *Conserving the Future: Wildlife Refuges and the Next Generation* (USFWS 2011).

The MOU recognizes that Presquile NWR provides an outstanding opportunity to promote an appreciation and understanding of fish and wildlife ecology, and the human role in the environment, through environmental education programming. Our strategic partnership with the JRA brings financial and human resources together to work more efficiently and effectively toward achieving our mutual conservation and stewardship goals. In the absence of this partnership, it is unlikely that the Service would solely be able to financially support and administer the Ecology School at Presquile NWR.

The MOU states that the Service and JRA will determine, on an annual basis, mutually acceptable educational, habitat improvement, or wildlife-oriented projects that JRA will accomplish as part of its environmental education mission for the benefit of the refuge. The MOU does not specify the number or quality of educational opportunities on the refuge, and it does not specify the number of students to be served by the Ecology School.

### 3.13.2 Public Deer Hunting

The refuge opened to public deer hunting in 1967 (32 FR 12444; codified in 50 CFR 32.31). Proposed changes to the refuge-specific regulation revisions have been published in the *Federal Register* and Title 50 in the CFRs annually since that time. We prepared a compatibility determination and categorical exclusion in 1994 (USFWS 1994). An updated compatibility determination is included in appendix B of this document. The Service has planned an updated NEPA review of the refuge's public deer hunt.

Public deer hunting at Presquile NWR is used as a means to manage the population and as a recreational use of the refuge. Between 1977 and 1988, an average of 199 visitors participated in the annual public deer hunt. Decommissioning of the ferry for visitor transport combined with the reallocation of refuge budget, staff, and priorities resulted in a substantial drop in refuge visitation. Between 2007 and 2011, an average of only 92 visitors participated in the annual public deer hunt. However, as a result, hunters' success rates have improved and administrative costs have been dramatically reduced.

A 3-day shotgun deer hunt in the fall is conducted on the refuge in accordance with State regulations. A maximum of 120 hunters (40 hunters per day) may participate in the quota hunt, which is administered in partnership with the VDGIF. Each hunting permit applicant is charged a processing fee. Hunters may take two deer, of either sex, per hunt day; a maximum of 240 deer may be harvested from the refuge annually.

The refuge does not operate a check station, but hunters are required to report their harvest in accordance with State regulations. The hunt is generally not filled to capacity (up to 40 hunters per day) because hunters may not meet the permit payment requirement, may not submit permit documents with all necessary signatures, and may choose not to participate in the hunt days due to inclement weather. We estimate that approximately 30 to 35 hunters participate in the hunt on good weather days (Brame personal communication).

Voluntarily provided feedback from hunters is used by refuge staff to improve hunting-related communications in the upcoming year. Following the hunt, some hunters contact refuge staff to talk about their hunt experience and to share photographs. Feedback provided is positive, with hunters mentioning how appreciative they are for the opportunity to hunt in this remote setting, expressing their excitement about having won the lottery to go hunting on the refuge, and that the hunt experience itself was unique. Hunters give positive feedback independent of their hunt success. We estimate that 10 to 20 percent of the hunters successfully harvest a deer (Brame personal communication).

The most recent health assessment of the local deer population was conducted in 2004, and study results indicate that the deer population in the vicinity is higher than optimal for Presquile NWR (Moyer 2004). We did temporarily operate a deer check station on the refuge during the 2005 and 2006 hunt, and the data collected indicated that the deer population seemed to be healthy (VDGIF 2005).



**3.13.3 Fishing**

The James River is Virginia's premier trophy blue cat fishery due to having large quantities of fish 50 pounds and larger (VDGIF 2011). However, Presquile NWR has not been opened to fishing from refuge property since refuge establishment (USFWS 1994) to protect sensitive shoreline habitat, minimize disturbance to wildlife, and because ample fishing opportunities exist on nearby waters allowed by State regulation and on adjacent lands where permitted by the land owner. We have not received any requests to open the refuge to fishing from the refuge shoreline, facilities, or structures in the past 9 years since current staff have been in place (Brame personal communication).

**3.13.4 General Public Uses**

In addition to the priority public uses described above, we have evaluated other general uses for their appropriateness and compatibility. Appendix B includes our updated evaluations and decisions.

The following activities were found to be appropriate and compatible:

- Research (general and targeted species surveys for plants and animals; bird banding; and health assessments of reptiles, birds, and deer)
- Wildlife observation and photography
- Environmental education
- Interpretation
- Hunting

The following activities were determined to be not appropriate uses of the refuge:

- Picnicking
- Cross-country skiing, snowshoeing, and sightseeing
- Collecting natural products
- Dog walking
- Geocaching
- Swimming and sunbathing

These activities were previously evaluated in 2007 and determined to be not appropriate. Appendix B includes updated findings in accordance with Service policy (603 FW 1).

## Chapter 4



Ecd Gaillard

*Black and white warbler*

# Management Direction and Implementation

- 4.1 Introduction
- 4.2 Presquile NWR Management
- 4.3 General Refuge Management
- 4.4 Goals, Objectives, and Strategies

## 4.1 Introduction

This chapter begins with a description of refuge goals, objectives, and strategies, and provides an overview of management direction, detailed later in this chapter. We then present those actions that are required by law or regulation, have been previously approved, or that help to achieve multiple refuge goals. We also identify decisions we are not making at this time and that will require additional NEPA analysis before a final decision can be made. We conclude with details on our goals, objectives, and strategies for managing the refuge. The array of management actions described are those that, in our professional judgment, will best achieve the refuge's purposes, vision, goals, and best respond to public issues.

### 4.1.1 Relating Goals, Objectives, and Strategies

#### Goals

Refuge goals are intentionally broad, descriptive statements of the desired future condition of refuge resources. They articulate the principal elements of the refuge purposes and our vision statement, and provide a foundation for developing specific management objectives and strategies. By design, they are less quantitative, and more prescriptive, in defining the target of our management. As noted in chapter 1, developing a strategic plan to achieve refuge goals is the purpose for developing the CCP.

#### Objectives

Objectives are essentially incremental steps toward achieving a goal. They further define management targets in measurable terms. They provide the basis for determining more detailed strategies, monitoring refuge accomplishments, and evaluating successes. The Service guidance in "Writing Refuge Management Goals and Objectives: A Handbook" (USFWS 2004c) recommends that objectives meet five criteria to be "SMART":

- (1) Specific
- (2) Measurable
- (3) Achievable
- (4) Results-oriented
- (5) Time-fixed

A rationale accompanies each objective to explain its context and why we think it is important. We will use the objectives to develop or revise refuge step-down plans, which we describe later in this chapter. We will measure our successes by how well we achieve the objectives. Unless otherwise noted, the objectives and strategies we describe will be implemented by refuge staff.

#### Strategies

Strategies are the specific actions, tools, or techniques we may use to achieve the objectives. The list of strategies under each objective represents the potential suite of actions we may implement. We will further evaluate most of the strategies in refuge step-down plans. Our successes will be measured by how well our strategies achieve our objectives and goals.

#### Inventory and Monitoring Activities

For most objectives, we also identify potential inventory and monitoring activities that will help us measure our success toward meeting refuge goals and objectives. The activities listed may be modified or further refined in the refuge's inventory and monitoring step-down plan.

## 4.2 Presquile NWR Management

It is important here to reemphasize that CCPs provide long-term guidance for management decisions through goals, objectives, and strategies. They represent our best estimate of future needs. This CCP details program levels and activities that are substantially above current budget allocations and, as such, should be viewed as strategic in nature. Our budgets are determined annually by Congress, and distributed through our Washington, DC, and regional offices before arriving at field stations. In summary, the actions proposed in this CCP represent our

strategic vision for the future of Presquile NWR. Final CCPs do not constitute a Service commitment for staffing increases, or funding for operations, maintenance, or future land acquisition. Implementation must be adjusted annually given the reality of budgets, staffing, and unforeseen critical priorities.

#### **4.2.1 Overview of Management Direction**

This plan emphasizes the management of specific refuge habitats to support priority refuge species whose habitat needs benefit other species of conservation concern that are found around the refuge and in the larger landscape of the lower James River. In particular, we will emphasize habitat for priority birds identified in BCR 30, such as migratory waterfowl, waterbirds, mature forest-dependent birds, as well as other priority refuge resources of concern, including the federally endangered Atlantic sturgeon and federally threatened sensitive joint-vetch. Map 4.1 depicts the habitat configuration that will result under this management direction.

We will emphasize maintaining and restoring the forest integrity of tidal freshwater marsh, tidal swamp forest, the James River and associated backwater habitats, and mature mixed mesic forest habitats through increased monitoring and data collection, and a more aggressive response to habitat changes associated with invasive species, global climate change, or storm events. We will also increase efforts to conduct scientific research regarding habitat and wildlife population monitoring through partnerships with other government agencies, organizations, and academic institutions.

Over the long-term, we will convert the approximately 200 acres of grassland habitat to mature mixed mesic forest, primarily through allowing natural succession to occur. Over the next 10 to 15 years, however, it will provide transitional mixed mesic forest habitat that would initially be dominated by shrubs and early successional tree species. This transitional habitat will benefit migratory bird species, such as American woodcock, northern bobwhite, prairie warbler, and field sparrow.

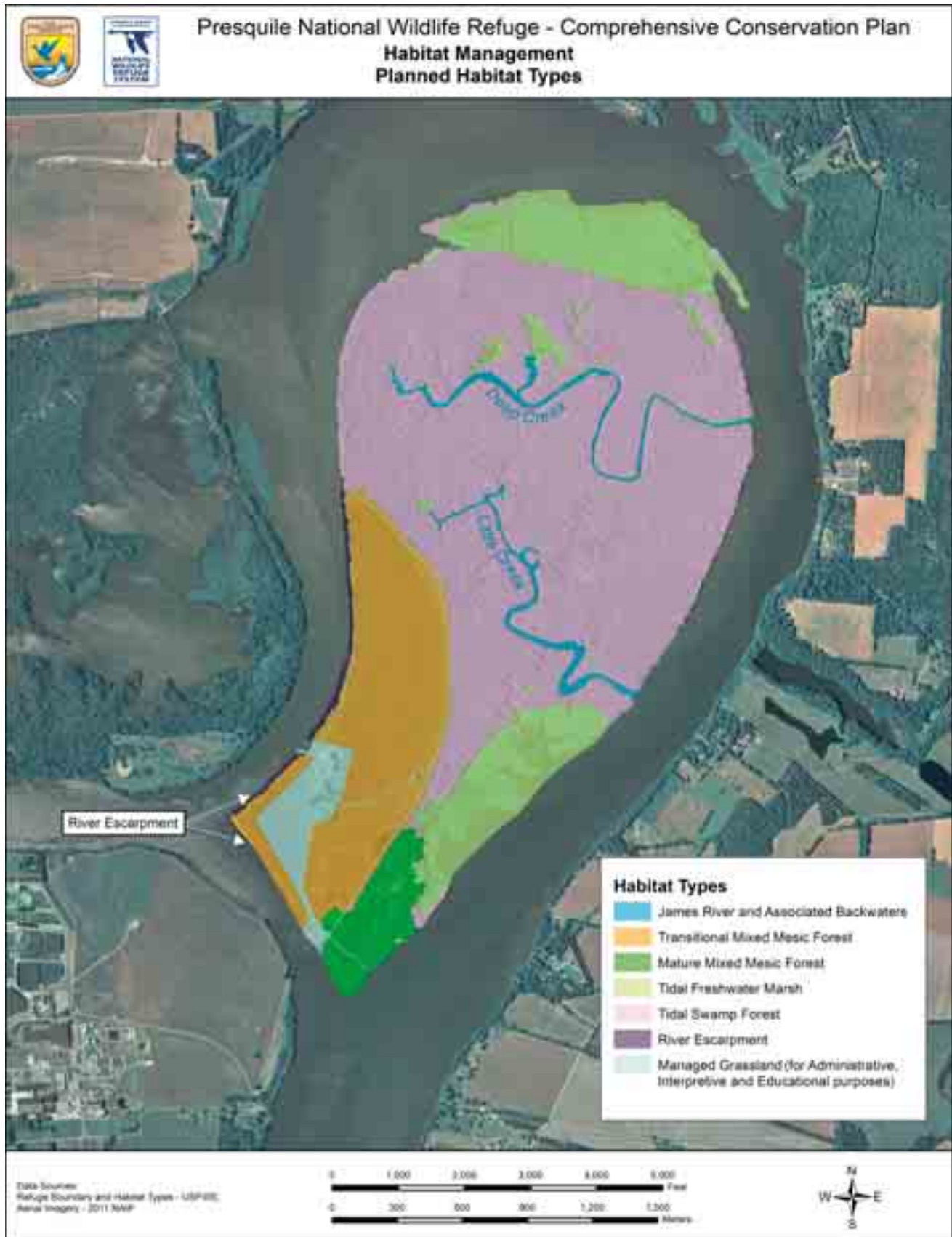
Under this plan, we will maintain approximately 46 acres of managed grasslands for administrative, interpretive, and educational purposes. This will be primarily maintained around refuge facilities and will not serve as quality habitat for grassland species. The only exception is a planned pollinator garden, less than 5 acres, that will be developed as a demonstration area. Other purposes for the managed grasslands will be to provide an opportunity to interpret historic land uses.

We will manage the 11 acres of river escarpment habitat to the maximum extent practicable. We will strive to maintain and restore the integrity of this habitat for the benefit of bald eagles, great blue herons and other wading and waterbirds, and migratory landbirds. In partnership with others, we will improve natural and cultural resource condition monitoring along the shoreline, assess the potential to slow bank erosion and reduce sediment loading into the James River, and develop shoreline management and improvement projects.

We will increase our efforts to protect cultural resources on the refuge, as well as expand our understanding of the refuge's resources and their role in the area's cultural history. Implementation of the recommendations from the Archaeological Overview (Goode et al. 2009) will be supplemented by our active pursuit of partnership opportunities to improve and promote understanding of Presquile NWR's extensive cultural history.

We will expand our on-refuge environmental education program through our partnership with JRA and bring an increased number of students to the

Map 4.1 Planned Habitat Types at Presquile NWR



refuge to participate in environmental education programs that meet Virginia State Standards of Learning requirements. We will continue to collaborate with existing partners to promote off-refuge environmental education, as well as propose to create a Friends group or develop new partnerships with other organizations in support of off-refuge environmental education.

An expanded on-refuge environmental education program will also allow us to increase the interpretive program. Improved interpretive materials will allow us to provide a consistent message to visitors to the refuge along with users associated with the Ecology School and the Captain John Smith Chesapeake NHT.

We will continue the current 3-day deer hunting program; however, under this plan we will consider extending the season length by approximately 2 days to provide a higher quality hunt experience. The extra days would allow us to better disperse the same number of hunters in space and time. Monitoring the deer herd on a regular basis is included in this plan to protect the integrity of forested habitats from degradation due to deer browse. Under this plan, we also propose to evaluate, within 5 years, opportunities to open the refuge to a turkey hunt and/or initiate a program for youth hunters if there is interest and resources are available. Before these uses could be implemented, additional NEPA analysis and public involvement would occur. Map 4.2 depicts the current public use facilities that will continue under this plan.

## 4.3 General Refuge Management

There are some actions we propose to take in managing Presquile NWR over the next 15 years that are required by law or policy, or represent actions that have undergone previous NEPA analysis, public review, agency review, and approval. Others may be administrative actions that do not require public review, but that we want to highlight in this public document.

Certain current practices and policies will continue, as discussed in more detail below, related to the following topics:

- Refuge staffing and administration
- Species and habitat conservation
- Visitor services management
- Findings of appropriateness and compatibility determinations
- Special use permits
- Research
- Climate change
- Refuge revenue sharing payments
- Special designation areas
- Additional NEPA analysis

### 4.3.1 Refuge Staffing and Administration

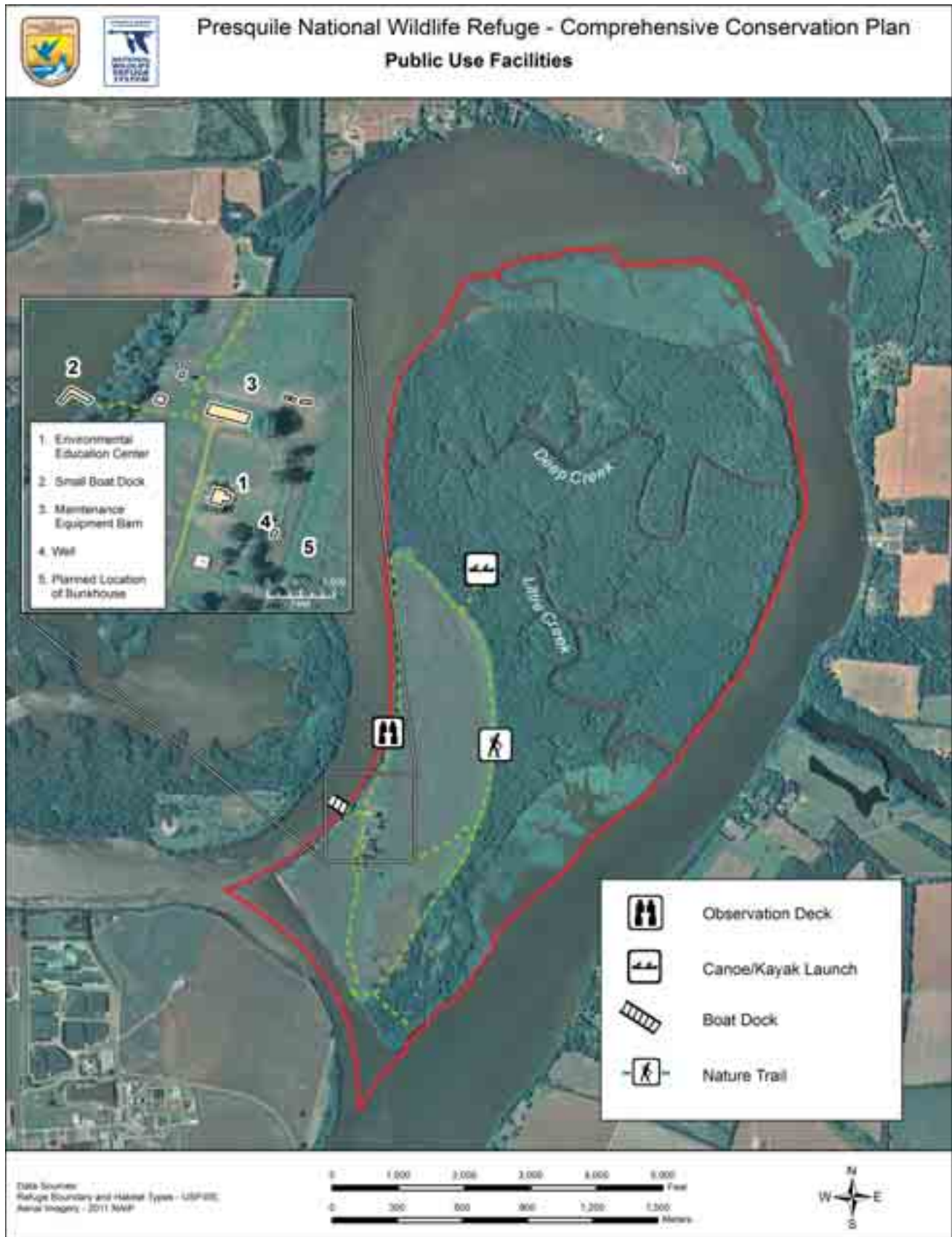
#### Refuge Staff

Continue to share staff across the Eastern Virginia Rivers NWR Complex, including the three new positions, visitor services specialist, refuge biologist, and maintenance worker, identified in appendix C of the Rappahannock River Valley NWR CCP (USFWS 2009).

#### *Discussion and Rationale*

In 2000, a decision was made by the Regional Chief to administratively group Presquile NWR with Rappahannock River Valley and James River NWRs to form the Eastern Virginia Rivers NWR Complex. In 2003, Plum Tree Island NWR joined the refuge complex. The intent of administratively grouping these refuges was to create management efficiencies, to the extent possible, due to declining budgets. As a result, the refuge complex headquarters was established

Map 4.2. Public Use Facilities at Presquile NWR



at Rappahannock River Valley NWR in Warsaw, Virginia and Presquile, James River, and Plum Tree Island NWRs became unstaffed refuges. The refuge manager for the refuge complex is responsible for setting staff priorities and resource distribution across the four refuges.

An analysis of refuge staffing using the National Staffing Model resulted in a proposed increase of three staff, with shared responsibilities among the four refuges in the refuge complex (USFWS 2007). Increasing refuge complex staff by three will help support management on Presquile NWR, including increased visitor services opportunities and management of the natural and built resources on the refuge. The three new positions will be allocated across each of the four refuges as needed to ensure efficient operation and management throughout the refuge complex.

#### **Requiring a Permit for Refuge Access**

Continue to require a permit for refuge access not associated with refuge-sponsored programs or planned activities.

#### *Discussion and Rationale*

Since refuge establishment, the refuge has been closed to general public access. Only those visitors engaged in a refuge program or refuge-sponsored event, or who contacted the refuge prior to their visit are allowed access. People interested in visiting the refuge outside of refuge-sponsored programs are required to request permission to access the refuge at least 3 business days in advance of their visit. If the request is determined to be compatible and is granted, refuge staff will issue a special use permit that visitors are required to carry a copy of while on the refuge. This policy works well because it:

- Proactively prevents incompatible or unauthorized uses from occurring on the refuge.
- Minimizes wildlife disturbance on the refuge by stipulating in the permit that access is in designated areas only.
- Minimizes cultural resource disturbances by requiring people to stay in designated areas.
- Enhances safety for the children that are participating in the environmental education programs offered year round.
- Allows for stricter monitoring of who is on the refuge and why.
- Minimizes conflicts between user groups (e.g., bird watchers and deer hunters) for safety purposes and supports high quality experiences.
- Protects the visitor experience of being immersed in nature in a secluded and remote area.
- Provides a mechanism for law enforcement to prevent people from beaching their boat on the fragile shoreline and engaging in other unauthorized uses.

Permit availability (i.e., the number of permits issued) is not a concern and is not predicted to be over the next 15 years. Very few permit requests are denied annually and the denials are typically based on requests for uses determined to be not compatible.

Additional details about this permit requirement are provided in the approved compatibility determination for “Wildlife Observation, Photography, Environmental Education, and Interpretation” in appendix B.



### Refuge Step-down Plans

Continue to maintain, update, or complete key refuge step-down plans according to the identified schedule; the habitat management plan (HMP), inventory and monitoring plan, and visitor services plan are priorities for completion.

#### *Discussion and Rationale*

The chapter Refuge Planning Policy (602 FW 4) identifies more than 25 step-down management plans that may be completed for each refuge, and refuge management determines which of the 25 step-down plans should be completed for their refuge. Those plans provide the details necessary to “step down” general goals and objectives to specific strategies and implementation schedules. Some require annual revisions; others are revised on a 5- to 10-year schedule. Some require additional NEPA analysis, public involvement, and compatibility determinations before they can be implemented.

The following step-down plans have been completed and will be updated in accordance with the Service’s revision schedule:

- Energy management plan (2003)
- Wildlife disease surveillance and contingency plan (2006)
- Fire management plan (2008)
- Safety plan (2010)
- Public deer hunt plan (2010)
- Hurricane action plan (2012)

The following step-down plans will be prepared within 3 years of CCP approval:

- Inventory and monitoring plan
- Visitor services plan
- Habitat management plan
- Law enforcement plan

The following three step-down plans are a priority for completion on Presquile NWR.

Habitat Management Plan: A habitat management Plan (HMP) for the refuge will be the requisite first step to achieving the objectives of goals 1 and 2. Since it serves as the basis for other step-down plans, it will need to be done first. We will complete an HMP within 3 years of CCP approval. The HMP will provide more details on the habitat management strategies we would use to accomplish CCP goals and objectives over the next 15 years. In particular, the HMP will detail the specific areas and habitat types we will manage for, as well as the tools and techniques we will use and the timing of our management actions. Additional analysis of the impacts of specific methods may be necessary to comply with NEPA. The HMP will also incorporate the results of appendix B, which identifies how we derived priority refuge species and habitats for the refuge.

In this CCP the goals, objectives, and strategies identify how we intend to manage habitats on the refuge. Both the CCP and HMP are based on current resource information, published research, and our own field experiences. Our methods, timing, and techniques will be updated as new, credible information becomes available. To facilitate our management, we will regularly maintain our databases, including GIS data, documenting any major vegetation changes on at least a 5-year basis.

Inventory and Monitoring Plan: The inventory and monitoring plan will outline and prioritize inventorying and monitoring activities for the refuge based on the priorities identified in this CCP and detailed in the HMP. The inventory and monitoring plan will be completed within 1 year from the completion of the HMP.

We will use our inventory and monitoring program to assess whether our original assumptions and proposed management actions are supporting our habitat and species objectives. The results of inventories and monitoring will provide us with more information on the status of our natural resources and allow us to make more informed management decisions. The inventory and monitoring plan will incorporate recommendations from the “Strategic Plan for Inventories and Monitoring on National Wildlife Refuges: Adapting to Environmental Change” (USFWS 2010a) to ensure a coordinated approach to inventory and monitoring across refuges.



Meghan Carfioi/USFWS

*Little Creek*

Visitor Services Plan:

A visitor services plan is required by Service policy (605 FW 1, Section 1.8.A). Exhibit 1 of that policy includes an outline for the plan. The visitor services plan will further detail strategies to help meet the visitor services goals and objectives contained in this CCP over the next 15 years. In particular, the visitor services plan will detail the specific programs, as well as the tools and techniques we will use and the timing of our management actions. Additional analysis of the impacts of specific activities may be necessary to comply with NEPA.

**Existing Facilities Maintenance and Planned New Construction**

Continue to maintain and renovate existing facilities as needed, and pursue energy efficiencies and sustainable designs in maintenance and planned new construction.

*Discussion and Rationale*

Periodic maintenance and renovation of existing facilities will continue to ensure safety and accessibility for staff and visitors. The refuge’s existing facilities are described in chapter 3. Construction and maintenance projects currently listed in the Refuge Operating Needs System (RONS) and Service Asset Maintenance Management System (SAMMS) databases will be undertaken in accordance with the regional and refuge rankings for each project (see appendix C). Other proposed projects will be new additions to the respective databases as indicated in appendix C. As we undertake these projects, we will conduct further consultations, as warranted, to ensure compliance with Federal laws

such as the Endangered Species Act, and National Historic Preservation Act. In addition, we will consult with other Federal, State, and local government agencies with jurisdiction and authority to ensure that activities are consistent, to the maximum extent practicable, with the enforceable policies of the Commonwealth's Coastal Management Program; to acquire required permits prior to commencing with projects; and to ensure that appropriate and required mitigation measures are employed by the Service and its agents during project implementation.

The Council on Environmental Quality guidelines for implementing NEPA also requires examining energy requirements and conservation potential in environmental documents. We will meet these guidelines by incorporating principles of sustainability in the design, construction, and operation of facilities on refuges.

The objectives of sustainability are to:

- Design structures to minimize adverse impacts on natural and cultural values.
- Reflect their environmental setting.
- Maintain and encourage biodiversity.
- Construct and retrofit facilities using energy-efficient materials and building techniques.
- Operate and maintain facilities to promote their sustainability.
- Illustrate and promote conservation principles and practices through sustainable design and ecologically sensitive use of natural resources.

The planned new bunkhouse and renovations to existing refuge facilities (see chapter 3, section 3.10.4), to the maximum extent practicable, will be LEED-compliant. This means they will:

- Be constructed with sustainable materials.
- Employ best management practices and green technologies during construction and for waste management, such as self-composting toilets, graywater processing systems, stormwater collection units, and solar panels.
- Have interpretive materials to illustrate sustainable design and function.

#### **Transportation Study**

Continue to evaluate options presented in the 2012 transportation study report to maintain or improve administrative and visitor access to the refuge. Conduct additional detailed planning under NEPA, as warranted.

#### *Discussion and Rationale*

In 2011, we used funds awarded from the Paul S. Sarbanes Transit in Parks Program (49 U.S.C. 5320) to hire VHB to initiate a transportation study for the refuge that was completed in August 2012. The purpose of the study was to investigate ways to maintain or improve access to the island refuge for both refuge staff and visitors. The scope of the study included an evaluation of the refuge's existing and future needs for transporting equipment and facilities, staff, volunteers, and the public, including but not limited to consideration of piers, ferry docks, the use of the existing cable ferry system or an updated version, the use of pontoon boats, outboard motor boats, trailers, and island storage

structures (existing and potential), their maintenance, and related equipment. The study estimated disposal value and cost to repair, restore, renovate, or redesign for reuse of transportation equipment and facilities. The transportation study resulted in a 2012 report that identified a range of feasible transportation system improvement options. The report is available from the Eastern Virginia Rivers NWR Complex headquarters. Findings of the study will be used to inform the development of a reasonable range of alternatives to be considered in a subsequent transportation plan/EA. Neither the transportation study nor this CCP includes the necessary level of NEPA analysis to assess the site-specific impacts associated with each of the transportation system improvement options. Therefore, additional NEPA analysis will be completed prior to implementation of any of the transportation system improvement options.

#### **Cable Ferry**

Continue to maintain the cable ferry in safe working condition to support administrative activities such as equipment transportation.

#### *Discussion and Rationale*

The cable ferry is still needed in the short term to transport equipment to the refuge. Alternative modes of transporting equipment, such as helicopter, are not feasible or reasonable.

#### **Rights-of-Way Easements**

Continue to maintain the two right-of-way easements.

#### *Discussion and Rationale*

Under this plan we will maintain the two right-of-way easements to support essential refuge operations, including refuge administrative access and maintaining facilities on the refuge. The Service has a right-of-way easement on private lands to the south (at ferry launch site) and a utility easement to the east. The USACE also has a right-of-way on both sides of the Turkey Island Cutoff to maintain this channel and, if necessary, deposit dredge materials on pre-designated areas of the refuge. This easement will continue to be maintained by USACE in perpetuity.

### **4.3.2 Species and Habitat Conservation**

#### **Adaptive Management**

Continue to employ an adaptive management approach for improving our resource decisions and management.

#### *Discussion and Rationale*

We will employ an adaptive management approach for improving resource management by better understanding ecological systems through iterative learning.

The Department's technical guidebook to assist managers and practitioners in adaptive management ("Adaptive Management: The U.S. Department of Interior, Technical Guide") provides the following definition for adaptive management (<http://www.doi.gov/initiatives/AdaptiveManagement/documents.html>; accessed April 2012):

"Adaptive management is a decision process that promotes flexible decision-making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of these outcomes both advances scientific understanding and helps adjust policies or operations as part of an iterative learning process. Adaptive management also recognizes the importance of natural variability in contributing to ecological resilience and productivity. It is not a 'trial and error' process, but rather emphasizes learning while doing. Adaptive management does not represent an end

in itself, but rather a means to more effective decisions and enhanced benefits. Its true measure is in how well it helps meet environmental, social and economic goals, increases scientific knowledge, and reduces tensions among stakeholders.”

This definition gives special emphasis to the uncertainty about management impacts, iterative learning to reduce uncertainty, and improved management as a result of continuous learning. This approach recognized that we can never achieve perfect understanding of the natural world and that we must implement management in the face of uncertainty. At the refuge level, adaptive management is an integral part of management planning, research design, and monitoring. Uncertainties about ecological systems are addressed through targeted monitoring of resource response to management actions and predictive models that mimic the function of the natural world.

Adaptive management gives the refuge manager flexibility to adjust management action or strategies if they do not meet goals or objectives. Significant changes from what we present in this CCP may warrant additional NEPA analysis and public comment. Minor changes from what we present in this CCP may not warrant additional NEPA analysis and public comment, but we will document them in our project evaluation or annual reports. Implementing an adaptive management approach supports all refuge goals. Furthermore, adaptive management is all the more compelling in light of climate change concerns.

#### **Invasive Species Control**

Continue to control invasive species on refuge lands as funding, staffing, and equipment logistics allow, with particular attention to controlling Johnsongrass and Canada thistle.

#### *Discussion and Rationale*

The Service identifies an invasive species as a species that is nonnative to an ecosystem, and whose introduction causes, or is likely to cause, harm to the economy, environment, or human health (Executive Order 13112). The unchecked spread of invasive plants threatens the biological diversity, integrity, and environmental health of all refuge habitats. In many cases, invasive species out-compete native species and become the dominant cover. This situation reduces the availability of native plants as food and cover for native wildlife. Over the past several decades, government agencies, conservation organizations, and the public have become more aware of the negative effects of invasive species. One report estimated the economic cost of invasive species in the U.S. at \$137 billion every year (Pimentel et al. 2000). Up to 46 percent of the plants and animals federally listed as threatened and endangered have been negatively impacted by invasive species (Wilcove et al. 1998, National Invasive Species Council 2001).

The Service’s Northeast Region initiated an effort to systematically identify, locate, and map invasive plant species occurring on refuge lands, leading to an effective integrated management plan. Presquile NWR has begun identifying and mapping locations of invasive species on the refuge as time and resources allow. Johnsongrass and Canada thistle are the biggest concerns on the refuge currently. We will use this information to



*Nonnative, invasive hibiscus*

Cyrus Brame/USFWS

guide the development of monitoring, control, and eradication projects. When control is deemed necessary, the refuge will use the most effective combinations of mechanical, biological, and chemical controls to achieve long-term control or eradication. Only herbicides approved by the regional contaminants coordinator will be used, and only in accordance with the approved rate and timing of application. Currently, the refuge uses the following chemicals to treat invasive species, when resources allow: Garlon 4, Glypro, and Plateau.

Under this plan, we will continue to implement the following strategies related to invasive species control:

- Follow the national guidance on invasive species provided in the Service Manual (620 FW 1.7G).
- Complete the inventory and mapping of invasive plant species and prioritize invasive species to be controlled or eradicated.
- Implement controls using biological, ecological, mechanical, prescribed fire, or chemical techniques, as needed.

### 4.3.3 Visitor Services Management

#### Chesapeake Bay Partnerships

Continue to participate in partnerships with communities and partners in the Chesapeake Bay watershed to implement the Strategy for Protecting and Restoring the Chesapeake Bay Watershed (EO Strategy) at the refuge, with an emphasis on land conservation and public access, and citizen stewardship.

Also, continue to implement the established partnership with the NPS, fulfilling the MOU in regards to the promotion of the Captain John Smith Chesapeake NHT and CBGN, at the refuge by enhancing place-based interpretation, providing public access, and fostering conservation and restoration of natural and cultural resources related to the Chesapeake Bay through programming, outreach, and citizen involvement.

#### *Discussion and Rationale*

Executive Order 13508, “Protection and Restoration of the Chesapeake Bay” (signed May 2009), outlines actions for the Federal government to take to make progress toward restoring the health of the Chesapeake Bay. The Federal Leadership Committee was created for the Chesapeake Bay, which in September 2010 issued the EO Strategy, outlining specific efforts to undertake. As part of the James River watershed, actions at Presquile NWR are related to the overall health of the Chesapeake Bay. Of the nine goals in the EO Strategy, the refuge is most directly connected to the goals of conserving land and increasing public access, in addition to expanding citizen stewardship.

Conserving Land and Increasing Public Access: In October 2010, the Service and NPS signed an MOU regarding cooperation and collaboration on a variety of efforts within the Chesapeake Bay watershed. Among these efforts is implementation of the Captain John Smith Chesapeake NHT and CBGN. During 2011, the Service actively participated in the planning process for implementing the Captain John Smith Chesapeake NHT on the James River. Presquile NWR has been identified as a key site for interpretation and education. Through continued collaboration, the Service and NPS will ensure that Captain John Smith Chesapeake NHT-related activities proposed to occur at Presquile NWR are implemented in a manner that is compatible with the purpose and intent of the refuge.

A fiscal year 2011 CBGN matching grant was used to help JRA partner with the Service to construct a boardwalk on the refuge to facilitate visitor access to the

refuge, offer unique opportunities to study the ecology of the James River, and help visitors develop a greater appreciation for the need to protect the health of this beautiful and historic natural resource.

**Citizen Stewardship:** The JRA partnership above also helps achieve the citizen stewardship goal of the EO Strategy. This partnership provides unique environmental education opportunities for students at Presquile NWR through the creation of new, overnight educational facilities using green infrastructure concepts, coupled with onsite lessons about sustainability, recycling, energy conservation, and creating habitat.

#### **Waterfowl Hunting Closure**

Continue to maintain and enforce the existing waterfowl hunting closure area, established by Secretarial Order in 1954. Work with VDGIF to promote opportunities for waterfowl hunting in nearby waters, as allowed by Federal and State regulations.

#### *Discussion and Rationale*

The 1954 Secretarial Order establishes the waterfowl hunting closure area to protect the concentrations of waterfowl that migrate through and winter here. The establishment of the waterfowl hunting closure supports the refuge's purpose as an inviolate sanctuary for migratory birds.

#### **Shoreline Fishing Closure**

Continue to maintain a closure for fishing from the refuge shoreline. Work with VDGIF to promote opportunities for public fishing in waters off refuge lands, as allowed by State regulations.

#### *Discussion and Rationale*

Since refuge establishment, we have worked to protect, maintain, and restore the ecological integrity of the refuge's upland, wetland, and aquatic habitats for the benefit of wildlife. Due to the potential to disturb nesting, roosting, and wintering wildlife, we limit activities along the refuge's shoreline to allow only those activities that support management of wildlife habitat and refuge access. For example, we control nonnative, invasive plant species along the river escarpment to protect native vegetation and wildlife habitat. We have also planted native trees on 20 acres of the refuge's western boundary in an effort to stabilize the eroding river escarpment and improve nesting habitat for bald eagles and other wildlife.

We manage refuge visitors to ensure they spend very little time along the shoreline, thereby minimizing disturbance to wildlife. We have designated locations for refuge access, which serve to funnel visitors directly to upland areas that can support compatible refuge uses (i.e., wildlife observation, photography, environmental education, interpretation, and public deer hunting) and where disturbance to nesting birds is avoided.

This closure for fishing, along with other shoreline access restrictions, has been in place since refuge establishment and has not been controversial. Over the last 9 years since current staff have been in place, they have not received any requests for fishing. We believe the public understands that fishing from the refuge shoreline would conflict with our efforts to protect, maintain, and restore the refuge's wildlife habitat (603 FW 2). In addition, we believe they recognize and are satisfied with the fact that there are ample opportunities for fishing in State and other public waters (where authorized) in the refuge vicinity.



Cyrus Brane/USFWS

*Native trees planted along Turkey Island cutoff*

#### **4.3.4 Findings of Appropriateness and Compatibility Determinations**

Chapter 1 describes the requirements for findings of appropriateness and compatibility determinations on existing and proposed refuge uses. Uses are evaluated based on whether or not they contribute to meeting refuge purposes, goals, and objectives. Appendix B includes all approved findings of appropriateness and compatibility determinations for Presquile NWR.

##### **Activities Allowed**

Continue to support wildlife observation, photography, environmental education and interpretation, hunting, and research conducted by non-Service personnel, according to approved compatibility determinations.

##### *Discussion and Rationale*

Please refer to section 4.4, goals 4 and 5, for details on these programs.

##### **Activities Not Allowed**

Continue to prohibit certain activities on the refuge that were determined by the refuge manager to be not appropriate.

##### *Discussion and Rationale*

We occasionally receive requests for refuge uses and activities that are prohibited by the Code of Federal Regulations (50 CFR 25- 26) or Service policy. Other activities are not allowed because the refuge manager has determined that the activities do not contribute to, or support, the purposes for the refuge, and may be provided elsewhere nearby on other ownerships. These activities will continue to be prohibited on refuge lands under all alternatives:

- Collecting natural products
- Cross-country skiing, snowshoeing, and sightseeing
- Dog walking
- Geocaching
- Picnicking
- Swimming and sunbathing



### 4.3.5 Special Use Permits

#### Permitting Process

Continue to implement 50 CFR Part 26 and Service policy (603 FW 2) which require the refuge manager to evaluate activities that require a special use permit for their appropriateness and compatibility on a case-by-case basis.

#### *Discussion and Rationale*

All research, commercial, and economic uses, and visitors unaccompanied by Service staff require special use permits. In the past, the refuge manager has issued special use permits for wildlife inventories, research, hunting, and partner-led educational programs. See section 4.3.7 below for additional information on research. We describe some of the activities that have been allowed under a permit in chapter 3. Also, refer to section 4.3.1 for specific details on issuing permits for general public access.

### 4.3.6 Research

Continue to support compatible research and investigations on the refuge by non-Service personnel that help further our knowledge of refuge resources, or which address regional conservation concerns to the Service.

#### *Discussion and Rationale*

Compatible research on the refuge will continue under special use permit when it can inform our management or Service priorities. For example, VCU has been conducting prothonotary warbler nesting and population research for more than 20 years resulting in over 20 publications in peer-reviewed journals readily accessed by the greater conservation community.

Research can be important in monitoring the effects of refuge management, or in evaluating regional conservation concerns. Data from the refuge may be used as a reference indicator to compare against other natural areas within the James River region. Establishment and maintenance of long-term data sets on refuge lands will also be important to understand when long-term change is occurring and when an event is an annual or short-term natural variation.

The Refuge Manual and the Service Manual both contain guidance on conducting and facilitating biological and ecological research and investigations on refuges. The Service published three objectives in the Refuge Manual 1982 for supporting research on units of the Refuge System (4 RM 6.2):

- To promote new information and improve the basis for, and quality of, refuge and other Service management decisions.
- To expand the body of scientific knowledge about fish and wildlife, their habitats, the use of the natural resources, appropriate resource management, and environmental health.
- To provide the opportunity for students and others to learn the principles of field research.

In 2006, the Service Manual provided further guidance on the appropriateness of conducting research on refuges in part 603, the appropriate refuge uses policy. It states that:

“We actively encourage cooperative natural and cultural research activities that address our management needs. We also encourage research related to the management of priority public uses. Such research activities are generally appropriate. However, we must review all research activities to decide if they are appropriate or not as defined in section 1.11. Research that directly benefits refuge management has priority over other research.”

All research conducted on the refuge must be determined in writing to be both appropriate and compatible, unless we determine it to be an administrative activity. Research projects must contribute to a need identified by the refuge or the Service. In the past we have conducted many research projects on the refuge and expect additional research opportunities to arise implementation of this CCP. Non-Service personnel conducting research on the refuge must provide the Service with a copy of all data collected and reports. The research organization or agency, in conjunction with the Service, will retain the use and ownership of all data and reports. In determining the appropriateness and compatibility of future research activities, we will follow Service policy guidance and employ the following programmatic objectives:

- Seek qualified researchers and funding to help answer refuge-specific management questions.
- Participate in appropriate multi-refuge studies conducted in partnership with others.
- Facilitate appropriate and compatible research by providing temporary housing and equipment, if available, for persons conducting fieldwork.
- Pursue peer-reviewed publications of research and ensure the Service is acknowledged as a contributor in research conducted on the refuge by others.

The biological research efforts detailed in section 3.11.5 that would continue to be supported are:

- Christmas Bird Count conducted by the Hopewell Chapter of the National Audubon Society.
- American black duck research conducted by VDGIF.
- Prothonotary warbler research conducted by VCU.
- Amphibian and reptile survey and health assessments conducted by the Virginia Herpetological Association.



*Prothonotary warbler*

#### 4.3.7 Climate Change

Continue to address climate change through the maintenance and restoration of healthy, connected, and genetically diverse wildlife populations and ecological communities, monitoring those conditions over the long-term, and through promoting energy efficient practices and promoting other carbon reduction activities.

##### *Discussion and Rationale*

There is consensus among the scientific community that global climate change, occurring in part as a result of emissions of carbon dioxide and other greenhouse gases from human activities, will lead to significant impacts across the U.S and the world (Joint Science Academies' Statement 2005, <http://www.nationalacademies.org/onpi/06072005.pdf>; accessed April 2012). This includes sea level rise adding stress to coastal communities and ecosystems (Wigley 2004). The effect of climate change on wildlife and habitats is expected to be variable and species-specific, with a predicted general trend of species ranges and vegetation communities shifting northward and higher in elevation.

Uncertainty about the future effects of climate change requires refuge managers to use adaptive management to maintain healthy ecosystems in light of

unpredictability (Inkley et al. 2004). This involves improving or adjusting policies and practices based on the outcomes of monitoring or management activities and may result in changes to regulations, shifts in active habitat management, or changes in management objectives. A few recommendations relevant to Presquile NWR made by Inkley et al. (2004) include the following:

- Prepare for diverse and extreme weather conditions (e.g., drought and flood).
- Maintain or restore healthy, connected, and genetically diverse wildlife populations to increase resiliency in wildlife and habitats.

Our planned restoration activities, with priority to the most degraded sites, would help promote healthy and resilient habitats. We will continue to restore native vegetation and control invasive plants on impacted areas. On the refuge, we will also contribute to regional efforts in monitoring climate change impacts and predicting the long-term effects of global climate change. At the refuge level, it will be increasingly important to understand how the refuge and its habitats and communities respond to potential changes, such as sea level rise and changes in temperature.

We will also reduce the carbon footprint of facilities, vehicles, and our refuge operations by using energy efficient equipment, where feasible, and maintaining and constructing facilities using sustainable green building technologies. The new bunkhouse is a good example of sustainable design.

#### **4.3.8 Refuge Revenue Sharing Payments**

Continue to issue annual refuge revenue sharing payments to counties in accordance with law and annual Congressional appropriations.

##### *Discussion and Rationale*

National wildlife refuges contribute to the revenues of local governments through shared revenue payments. Federally owned lands are not taxable, but under the provisions of the Refuge Revenue Sharing Act, the municipality or other local unit of government receives an annual refuge revenue sharing payment to offset the loss of property taxes that would have been collected if the land had remained in private ownership. In addition, federally owned land requires few services from municipalities, yet it provides valuable recreational opportunities for local residents. As we describe in chapter 3, we pay annual refuge revenue sharing payments based on the acreage and the appraised value of refuge lands. The annual payments are calculated by formula determined by, and with funds appropriated by, Congress. We will continue those payments in accordance with the law, commensurate with changes in the appraised market value of refuge lands, or new appropriation levels dictated by Congress.

#### **4.3.9 Special Designation Areas**

##### **Regional and State Special Area Designations**

Continue to protect and maintain the characteristics on refuge lands that contributed to the area's special designation as the Lower James River Important Bird Area, as well as its contribution to other State natural and cultural resource area designations.

##### *Discussion and Rationale*

In chapter 3, we describe the various special area designations that include the refuge. Most relate to significant natural and cultural resources in the region, and the unique opportunities the area affords to protect and interpret these resources. Our existing and planned activities on the refuge will be consistent with, or not detract from, those special area designations.

**Wilderness**

Continue to conduct wilderness reviews every 15 years as required by Service policies (602 FW 1 and 3, and 610 FW 4).

*Discussion and Rationale*

A wilderness review is the process we follow to identify and recommend for congressional designation Refuge System lands and waters that merit inclusion in the National Wilderness Preservation System. Wilderness reviews are a required element of CCPs, and we follow the planning process outlined in 602 FW 1 and 3.

The wilderness review process has three phases:

- (1) Inventory. We identify lands and waters that meet the minimum criteria for wilderness. These areas are called wilderness study areas.
- (2) Study. We evaluate wilderness study areas to determine if they are suitable for wilderness designation.
- (3) Recommendation. We use the findings of the study to determine if we will recommend the area for designation as wilderness in the final CCP. We report our wilderness recommendations from the Service Director through the Secretary of the Interior and the President, to Congress, in a wilderness study report.

We conducted phase 1, the inventory, for Presquile NWR and determined that it does not meet all the minimum criteria for wilderness. Size, naturalness, and solitude or primitive and unconfined recreation, are the minimum criteria established in the Wilderness Act. We found that the refuge did not meet the naturalness criterion. Our wilderness review results are included as appendix D.

**4.3.10 Additional NEPA Analysis**

This CCP has been developed with sufficient detail to account for the greatest potential impacts that could result from the proposed actions identified under this plan. However, additional NEPA analysis will be necessary for certain types of actions. Where decisions have not been made in this CCP, but must be made later, we analyze a possible range of impacts in this document, but may need to supplement this analysis later.

*The cable ferry*



Daniel Lay

Examples of proposed actions that may require further analysis include:

- Shoreline stabilization projects involving construction.
- Transportation and alternative access improvements involving construction.
- Expansions to the hunting program.

## 4.4 Goals, Objectives, and Strategies

### GOAL 1.

#### Forested and Emergent Wetlands and Aquatic Resources

Protect, maintain, and restore the integrity of the refuge's tidal swamp forest and tidal freshwater marsh to sustain native plants and wildlife, including species of conservation concern, and benefit aquatic resources of the James River watershed and Chesapeake Bay.

#### Objective 1.1 Tidal Forest Swamp

Over the 15-year life of the plan, protect, maintain, and restore, as warranted, approximately 738 acres of mature, contiguous tidal swamp forest to ensure the integrity of the forest is maintained or increased, and to benefit priority breeding birds of concern (e.g., prothonotary warbler, bald eagle, Louisiana waterthrush), migrating and wintering waterfowl, and other native wildlife.

#### Discussion and Rationale

Tidal swamp forest makes up approximately 56 percent of the refuge. It is a fairly large, contiguous block located in the north central part of the refuge surrounded by tidal freshwater marsh to the north and east and upland habitats to the south. As discussed in chapter 3, this area is composed of mature green ash, black gum, bald cypress, and red maple trees with a sparse, poorly developed understory. It provides critical habitat for multiple species of priority refuge resources of concern, including bald eagle, prothonotary warbler, and Louisiana waterthrush breeding, migratory, and overwintering habitat. See chapter 3 for a more detailed description.

Presquile NWR supports breeding, migratory, and overwintering habitat for bald eagles. Currently there are two active nests on the refuge. The large, mature trees of the tidal swamp forest, along with refuge's river escarpment habitat, provide perching sites for bald eagles foraging along the James River, as well as bald eagle overwintering habitat, and habitat during spring and fall migration. The refuge is within a designated winter concentration area for bald eagles (VDGIF 2008). The abundance and presence of the overwintering bald eagles provided the foundation for the inclusion of the refuge in the Lower James River Important Bird Area (Audubon 2007).

Destruction of forested bottomland habitats, such as tidal swamp forest, and the degradation of habitat through silviculture activities, has led to a decline in the prothonotary warbler population throughout much of their historical range. The prothonotary warbler is the only eastern wood warbler species that uses cavities in trees and other artificial structures for nesting. Nests are located over and near water in wooded areas. They require sparse understory and avoid forest habitats less than 250 acres (Petit 1999). The tidal swamp forest of Presquile NWR provides breeding habitat for this priority refuge resource of concern. VCU has been maintaining an artificial nest box program on the refuge since 1987 which has resulted in over 25 publications that have contributed to the understanding of the biology of this declining species. Many of the studies have focused on understanding the reproductive and nesting characteristics of the species. The abundance of prothonotary warblers found on the refuge also helped to contribute to the designation of this portion of the lower James River as an

Audubon Important Bird Area (Audubon 2007). As we look to the future of this long-term study, refuge staff will become more involved in identifying research questions that will contribute to the mission of the Refuge System and the refuge purposes and goals.

Louisiana waterthrush is another species of high conservation concern that use forested habitat located near flowing water, such as the tidal creeks through the refuge (Mattsson et al. 2009), for breeding and migration (Mattsson et al. 2009). It is a high-priority species of conservation concern for BCR 30 (ACJV 2007).

Tidal swamp forest habitat along with the tidal freshwater marsh (objective 1.2) and James River and tidal creeks (objective 1.3) provide critical migratory and overwintering habitat for waterfowl along the Atlantic Flyway. Between 1997 and 2006, 30 species of waterfowl were observed during the annual Hopewell Christmas Bird Count including American black duck, mallard, Canada goose and wood duck (see chapter 3 for additional information). Maintenance of this habitat, in the form of protection and conservation, along with monitoring, will be important for the refuge to fulfill its purpose for migratory birds, including waterfowl, and to sustain populations during the migratory and wintering seasons.

Currently, much of the tidal swamp forest habitat is ecologically and hydrologically intact, with minimal presence of invasive species. As a result, this area requires minimal management to provide beneficial habitat. Access to the tidal swamp forest is limited due to dense vegetation and water, which makes potential management activities difficult.

Under this plan, we will conduct a rigorous inventory and monitoring program to collect data about existing and future conditions to identify potential changes and trends in habitat conditions or species populations. We will plan to use the inventory and monitoring program to inform us on the outcomes of our management decisions and direct our future management actions. By making informed management decisions, we will be better able to maintain or restore resiliency, which is the ability for an ecosystem to return to a stable state following change, in the tidal swamp forest habitat.

As discussed in chapter 3, under different global climate change scenarios, up to 76 percent of the tidal swamp forest habitat could be altered as a result of rising sea levels. Additionally, invasive species, such as emerald ash borer, have the potential to negatively impact tidal swamp forest habitat. Creating an inventory and management program will allow us to detect these changes, rapidly respond to them, understand the effects of the management, and make informed decisions. Adaptive management will be important for protecting the tidal swamp forest in the future.

### **Strategies**

*Continue to:*

- Plant green ash and bald cypress trees where gaps occur and when resources allow.
- Maintain and enforce public access closures on the refuge to reduce disturbance to breeding birds and habitat.

*Within 5 years of CCP completion:*

- Work with The Nature Conservancy (TNC) and VNHP to identify reference sites at the refuge that can be used as regional indicators of quality tidal swamp forest.

- Develop an index of forest integrity to establish what habitat features should be inventoried, monitored, and maintained in this habitat type on the refuge, and to serve as a baseline for future management.
- Identify and prioritize additional locations for potential restoration plantings to offset loss of refuge lands due to erosion or catastrophic storm events.
- Partner with VDGIF to evaluate additional opportunities to enhance migrating and wintering waterfowl habitat on and adjacent to the refuge (assuming landowner is willing) by planting native vegetation. Establish partnership agreements with landowners if opportunities arise.
- Work with VDGIF to identify State waters, within or adjacent to the refuge boundary, where access to sensitive areas could be closed during specific seasons to protect resources.

#### **Inventory and Monitoring Activities**

- Support VCU's long-term (20+ years) research study to evaluate prothonotary warbler nesting success and productivity in nest boxes. Within two years, establish an annual coordination meeting with the VCU researchers to determine how future study design can address questions of interest to refuge management, the potential impacts of climate change, and to support other regional North Atlantic landscape conservation cooperatives and Service inventory, monitoring, and research priorities.
- Work with VDGIF to study large-scale movement patterns (including migration routes, timing of migration, staging and stopover areas, winter habitat use, and breeding grounds affiliations) of American black ducks.
- Include in an inventory and monitoring plan:
  - ✱ A list of integrity index features to inventory and monitor.
  - ✱ A schedule for baseline inventory of plant species and composition to refine the existing vegetation cover map.
  - ✱ Strategies to monitor the emerald ash borer (pest).
  - ✱ An early detection and rapid response program to address degradation of plant and animal communities caused by climate change and invasive species, especially those potentially stand-replacing, invasive species, such as phragmites.
  - ✱ Strategies to establish long-term monitoring stations to evaluate effects of climate change, including tidal elevations, changes in species composition, and tree mortality.
- Pursue partnership opportunities to implement the inventory and monitoring plan and expand inventory and monitoring efforts.

#### **Objective 1.2 Tidal Freshwater Marsh**

Over the 15-year life of the plan, protect, maintain, and restore, as warranted, approximately 189 acres of tidal freshwater marsh to ensure the integrity of the marsh is maintained or increased, and to benefit priority species of concern, such as the federally threatened sensitive joint-vetch, migrating and wintering waterfowl, such as American black duck and wood duck, and waterbirds, such as American bittern and king rail.

### Discussion and Rationale

Tidal freshwater marsh comprises approximately 14 percent of Presquile NWR. It is primarily located along the northern edge and southeastern corner of the refuge. In addition, there are scattered pockets of tidal freshwater marsh habitat along the interior tidal creeks. As discussed in chapter 3, the northern tidal freshwater marsh area is composed primarily of rice cut grass and other grass species, while the southeastern corner has more open water with wild rice, salt marsh cordgrass, and arrow arum as the dominant plants. There are populations of the federally threatened sensitive joint-vetch in the northern tidal freshwater marsh and along an interior tidal creek. Marsh senna, which has a Virginia ranking of “vulnerable,” also has a population in the northern marsh. Tidal freshwater marsh habitat is important for migratory and wintering waterfowl, including American black duck and wood duck, and breeding and wintering waterbirds, such as American bittern, and king rail. See chapter 3 for a more detailed description.

As discussed in the previous objective, tidal freshwater marsh habitat along with tidal swamp forest and the James River are integral to providing breeding, migratory, and overwintering habitat for a variety of waterfowl, waterbirds, and shorebirds. American black duck, which is designated as the highest conservation priority for BCR 30 in both tidal freshwater marsh and tidal swamp forest habitats (ACJV 2007), has been observed on the refuge during spring and fall migration and during the overwintering period. Tidal habitats in the Mid-Atlantic are essential overwintering habitat for this species (Longcore et al. 2000). Waterbird species, such as king rail and American bittern, use tidal freshwater marsh habitat with its dense vegetation during migration.

Sensitive joint-vetch is an annual legume that is found on the lower edge of the intertidal freshwater marsh zone that receives inundation twice daily (VNHP Factsheet, [http://www.dcr.virginia.gov/natural\\_heritage/documents/fsaevi.pdf](http://www.dcr.virginia.gov/natural_heritage/documents/fsaevi.pdf); accessed April 2012). It is found in areas with high plant diversity and requires bare or sparsely vegetated substrates to grow, such as those created by muskrat activity or in depositional zones. Invasive species that create monocultures and reduce the open areas is a significant threat to this species. Marsh senna can be confused with sensitive joint-vetch because it has a similar appearance and is found in similar habitats. It is listed as a watch species for Virginia by VNHP (Townsend 2009).

Currently, much of the tidal freshwater marsh habitat is ecologically and hydrologically intact, with minimal presence of invasive species. As a result,



Cyrus Brame/USFWS

*Waterfowl at Presquile National Wildlife Refuge*



this area currently requires minimal management to provide beneficial habitat. Access to the tidal freshwater marsh is limited due to dense vegetation and water, which makes potential management activities difficult.

Under this plan, we will conduct a similar rigorous inventory and monitoring program as outlined in objective 1.1 to collect data about existing and future conditions, to identify potential changes and trends in habitat conditions or species populations. The adaptive management approach outlined in the previous objective may be extremely helpful to identify and respond to existing and new observations of invasive plant species. Invasive species, such as purple loosestrife and phragmites, have not yet been found on the refuge, but along with marsh dewflower which is currently present on the refuge, they represent a potential threat to the tidal freshwater marsh habitat.

### Strategies

*Continue to:*

- Protect populations of federally threatened sensitive joint-vetch as opportunities arise.
- Prohibit general public access within the tidal freshwater marsh to minimize disturbance to sensitive habitats.
- Maintain public access closures on the refuge to reduce disturbance to habitat and breeding birds.

*Within 5 years of CCP completion:*

- Work with TNC and VNHP to identify reference sites that can be used as regional indicators of quality tidal freshwater marsh.
- Develop an index of marsh integrity to establish what habitat features should be inventoried, monitored, and maintained in this habitat type on the refuge, and to serve as a baseline for future management.
- Identify and prioritize additional locations for potential restoration plantings to offset loss of refuge lands due to erosion or catastrophic storm events.
- Partner with VDGIF to evaluate additional opportunities to enhance migrating and wintering waterfowl habitat on and adjacent to the refuge (from willing landowners and partners with easements) by planting native vegetation. Establish partnership agreements with landowners if opportunities arise.
- Work with VDGIF to identify State waters adjacent to the refuge where access to sensitive areas could be closed during specific seasons.
- Conduct a survey for rare, threatened, and endangered species and natural communities.

### Inventory and Monitoring Activities

- Conduct monitoring of invasive species to the extent funding and staffing allow.
- Work with the Virginia Field Office and recovery team to conduct monitoring of federally listed sensitive joint-vetch populations as funding and staffing allows and given support by partners.
- Include in an inventory and monitoring plan:
  - ✱ A list of integrity index features to inventory and monitor.

- ✱ A schedule for baseline inventory of plant species and composition to refine the existing vegetation cover map.
- ✱ An early detection and rapid response program to address degradation of the plant and animal communities caused by climate change and invasive species, especially those potentially stand-replacing, invasive species, such as phragmites, marsh dewflower, and purple loosestrife.
- ✱ Strategies to establish long-term monitoring stations to evaluate effects of climate change including tidal elevations, changes in species composition, and tree mortality.
- Strategies for working with VDGIF and other partners to monitor for breeding wood duck and black duck.
- Plans for a secretive marsh bird survey following regional protocols.
- A formal protocol for sensitive joint-vetch.
- Pursue partnership opportunities to implement the inventory and monitoring plan (e.g., universities, non-governmental organizations, and State agencies) and expand inventory and monitoring efforts.

**Objective 1.3 Aquatic Resources**

Over the 15-year life of the plan, contribute to the protection of the refuge's tidal creeks and the James River main stem for the benefit of aquatic resources of concern, including the federally endangered Atlantic sturgeon, river herring, American shad, and freshwater mussels, and as foraging and resting habitat for waterfowl, waterbirds, and bald eagles.

**Discussion and Rationale**

The James River and its associated backwater habitats, including tidal creeks, are important spawning habitats for resident and migratory fish, such as the federally endangered Atlantic sturgeon, American shad, freshwater mussels, and as foraging and resting habitat for migratory and overwintering waterfowl, waterbirds, and bald eagles. Baseline information about species and habitat conditions is needed to inform step-down and project-specific refuge management plans, such as a shoreline management plan. The recent listing of Atlantic sturgeon and the construction of an experimental reef immediately adjacent to the refuge underscore this need to know more about the refuge's aquatic habitats and its ability to support species of concern, like the sturgeon.

Prior to 1890, it was believed that the Chesapeake Bay and its tributaries contained over 20,000 adult female Atlantic sturgeon. From 1950s to the mid-1990s, a large commercial fishery harvested approximately 100,000 to 250,000 pounds per year of Atlantic sturgeon (NOAA 2010). In 1998, a moratorium on commercial fishing was enacted. Currently, there is an existing spawning population in the James River estimated at 300 individuals (NOAA 2012) that migrate upriver in the spring to spawn in deep, moderately flowing water over hard substrate (<http://www.nmfs.noaa.gov/pr/species/fish/atlanticsturgeon.htm>; accessed April 2012). Fertilized eggs will develop into larval fish, which will then migrate downstream to develop and mature in the marine waters of the coast.

In 2010, an artificial spawning reef, targeted to benefit the Atlantic sturgeon, was installed on the southeastern corner of the refuge near the confluence of the Turkey Island Cutoff and the oxbow, immediately adjacent to the refuge. The project is a collaboration among the Service, JRA, USACE, and VCU. Since it was created, no Atlantic sturgeon has been observed spawning on it; however,

American shad, river herring, and other fish species have been documented spawning on the reef indicating its value to a wide diversity of James River aquatic life (JRA 2010). In 2012, the Atlantic sturgeon was federally listed as endangered. With the recent listing, we anticipate our role in supporting the recovery of this species will increase as we work with our partners.

Similar to Atlantic sturgeon, American shad spend a significant portion of their life in marine waters and migrate to freshwater to spawn. As discussed in chapter 3, the Virginia Marine Resources Commission issued a moratorium on American shad harvest in the Chesapeake Bay and its tributaries due to concerns with overfishing, habitat degradation such as pollution, dams, and land use changes. Information about the specific spawning and nursery habitat characteristics required for American shad in Virginia's rivers is incomplete (Bilkovic et al. 2002). At a minimum, the refuge can work with partners to protect and enhance aquatic habitat within and around Presquile NWR to facilitate the presence of shad in the James River and to create and maintain spawning habitat.

Besides migratory fish, the tidal creeks of Presquile NWR are relatively intact and may provide habitat for freshwater mussels and other non-migratory fish species, such as bridle shiner, alewife, and blueback herring (collectively referred to as river herring), and gizzard shad. The adjacent marsh provides potential nursery habitat for fish that can use the larger James River and Chesapeake Bay system.

Under this plan, management of the James River and associated backwaters habitats, including tidal creeks, is fairly minimal. Protecting these intact habitats and maintaining healthy populations of native species requires a proactive approach to detecting changes and assessing threats. The tidal creeks are ecologically and hydrologically intact with minimal presence of invasive species. The James River watershed is approximately 10,432 square miles. It is difficult for a 1,329-acre refuge to make a significant impact in improving water quality or providing habitat that benefits species for the whole system. However, under this plan we will engage in activities that will maximize our contribution to the James River watershed, such as implementing best management practices on refuge lands to minimize sedimentation to the James River.

The inventory and monitoring program in this plan may support additional efforts to restore Atlantic sturgeon and American shad habitat elsewhere in the James River system. Data collected can provide tools to continue and improve habitat restoration. Monitoring of tidal creeks and aquatic habitats may provide critical reference information as other aquatic resources outside of the refuge are affected by global climate change and land use changes.

### Strategies

*Continue to:*

- Implement best management practices to minimize potential for refuge actions (e.g., trail and facility work) to increase sediment load and deposition in the James River.
- Plant and maintain vegetated riparian areas and natural habitats.
- Support partner efforts to restore federally listed Atlantic sturgeon habitat.

*Within 3 years of CCP completion:*

- Consult with the Service's Virginia Fisheries Coordinators Office for technical assistance regarding survey techniques, tools, and funds available to assess and prioritize potential biological threats to aquatic habitats and species.
- Develop plans to support the Virginia Field Office, the Virginia Fisheries Coordinators Office, and other partners in efforts to restore and monitor Atlantic sturgeon, shad, and mussel habitat.

#### **Inventory and Monitoring Activities**

- Work with partners (e.g., James Riverkeeper) to monitor the two water quality stations.
- Support partner efforts to monitor the federally listed Atlantic sturgeon habitat.
- Include in an inventory and monitoring plan:
  - \* Work with refuge partners (e.g., Chesapeake Bay Foundation Grasses for the Masses program) and others to evaluate potential to expand water quality and submerged aquatic vegetation monitoring efforts.
  - \* Strategies to monitor aquatic macroinvertebrate communities that indicate food quality, water quality, and ecological integrity.
  - \* Strategies to monitor conditions surrounding existing infrastructure to determine how much it may contribute sedimentation to the James River.

## **GOAL 2.**

### **Upland Habitats**

Protect, restore, and enhance the refuge's upland habitats, with emphasis on the mixed mesic forest ecological community, to sustain plants and wildlife native to the James River area, including species of conservation concern.

#### **Objective 2.1 Mature Mixed Mesic Forest**

Over the 15-year life of the plan, maintain the biological integrity, diversity, and health of the refuge's 46 acres of contiguous, mature mixed mesic forest to provide breeding and migratory habitat for forest interior dwelling birds of conservation concern, including scarlet tanager and wood thrush, as well as to sustain other native plants and wildlife.

#### **Discussion and Rationale**

Mature mixed mesic forest comprises approximately three percent of Presquile NWR. It is located along the southeastern corner of the refuge, bordered by tidal freshwater marsh to the north and upland habitats to the west. As discussed in chapter 3, this area is composed primarily of red cedar and black locust. Under this plan we will improve forest diversity by actively restoring the habitat to a greater mix of native mixed mesic species.

Mixed mesic forest habitats are important for bird conservation. They provide breeding and stopover habitat for neotropical migrants and represent the second highest number of priority conservation species in BCR 30 (ACJV 2007). Similar to forested wetlands, such as tidal swamp forest, these forested habitats have been destroyed, altered, and fragmented through development and changes in land use in the region. From 1957 to 2006, approximately 24 percent or close to 55,000 acres of the forested habitat in Chesterfield County was converted to other land uses (Reuse 2006). Today only eight percent of the Chesterfield County's forested habitat is in public ownership. Although the mature mixed

mesic forest comprises only 46 acres on the refuge, management to maintain the integrity of the forest and the diversity of this habitat in conjunction with the management of other habitats on the refuge will help to reduce forest fragmentation and contribute to the overall landscape's ability and the refuge's mission to support migratory birds.

Two of our refuge resources of concern for mature mixed mesic forest, the wood thrush and scarlet tanagers, represent bird species that require conditions that we can provide on the refuge and may also use portions of other habitats on the refuge at some point during their life history. Both species also represent regional conservation priorities. Wood thrush is designated as the highest conservation priority within mixed mesic (upland) forested habitats in BCR 30 (ACJV 2007). It breeds in forest stands varying from less than 2 acres to over 1,200 acres (Watts 1999) with a diverse mix of tree species with moderate mid-level canopy structure and shrub density (Evans et al.2011). The Mid-Atlantic Coastal Plain Partners in Flight Conservation Plan identified wood thrush as one of the best indicators of the entire gradient of forest types (transition from hardwood-dominated stands away from the coast to pine-dominated stands near the coast) within the region (Watts 1999). It is believed providing habitat conditions for wood thrush will support the habitat requirements of other priority bird species. Scarlet tanagers breed in a variety of forest types including mature mixed mesic forests that are at least 30 acres in size with a closed canopy (Mowbray 1999). Because they use the upper portion of the canopy of mature, large trees for nesting, they are influenced by the condition of the upper canopy (Watts 1999).

We will conduct a similar rigorous inventory and monitoring program as outlined in previous objectives to collect data about existing and future conditions to identify potential changes and trends in habitat conditions or species populations. The adaptive management approach outlined previously will be extremely helpful to identify the outcomes of any forest stand management actions. Data could also be used to improve restoration techniques for the transitional mixed mesic forest objective.

### **Strategies**

*Continue to:*

- Restrict public access to designated routes to avoid impacts to vegetation.

*Within 5 years of CCP completion:*

- Develop an index of forest integrity to establish what habitat features should be inventoried, monitored, and maintained, and to serve as a baseline for future management.
- Restore the area of early successional forest in the southeastern corner of the refuge (now dominated by black locust) to encourage transition to mixed mesic native hardwood forest. Consult forest experts to determine if active management is feasible, practicable, and desirable. Implement actions if determined reasonable.

### **Inventory and Monitoring Activities**

- Conduct invasive species monitoring as often as funding and staffing allow.
- Include in inventory and monitoring plan:
  - \* A list of integrity index features to inventory and monitor.

- ✱ A schedule for baseline inventory of plant species and composition to refine the existing vegetation cover map.
- ✱ An early detection and rapid response program to address degradation of the plant and animal communities caused by climate change and invasive species, especially those that are potentially stand-replacing, invasive species.
- ✱ Strategies to establish long-term monitoring stations to evaluate effects of climate change including tidal elevations, changes in species composition, and tree mortality.
- Strategies for working with VDGIF and other partners to monitor deer populations and assess their impact on forest regeneration, and develop management options as warranted.
- Land bird monitoring according to regional protocols using Service and citizen science partnerships.
- Pursue partnership opportunities to implement the inventory and monitoring plan and expand inventory and monitoring efforts.

**Objective 2.2 Transitional Mixed Mesic Forest**

Over the 15-year life of the plan, promote native forest succession on approximately 197 acres of the refuge's existing grassland and shrub habitat to further enhance the biological integrity, diversity, and health of the refuge's mature mixed mesic forest and associated species of conservation concern (re: objective 2.1). While in transition to mature forest, these acres will contribute to breeding and migrating habitat for birds of conservation concern that use early successional forest habitat, including prairie warbler, field sparrow, American woodcock, and northern bobwhite, as well as to sustain other native plants and wildlife. In the short-term, active management will focus on invasive plant control, namely for Johnsongrass, and planting native trees where forest succession is inhibited due to site conditions or past land use practices.

**Discussion and Rationale**

Shrub habitat, which is also known by several other names, such as scrub-shrub, shrubland, or early successional forest, represents a transitional or temporary state between open grassland and forested habitats. Historically, this habitat type likely comprised less than 10 percent of BCR 30 and was the result of disturbance, such as fire, storms, and beaver impoundments in low areas, which created openings in the forest (ACJV 2007). Over the last 50 years, land use changes, such as urban development, forest management, and the increase in the intensity of agricultural operations, have decreased the amount of early successional habitat (Norman and Puckett, <http://www.dgif.virginia.gov/wildlife/quail/action-plan/quail-action-plan.pdf>; accessed April 2012).

The 197 acres we are proposing to convert to mixed mesic forest presently exists as old field/grassland. We are currently managing against the process of woody vegetation invasion primarily through periodic mowing. If we stopped managing the area, as discussed above, it would naturally transition to an early successional forest over the next 15 years, and ultimately become a mature forest after 50 years. Over the next 15 years, under this plan, we will encourage this succession process and assist it as much as possible through planting native tree and shrub species and controlling invasive species.

Providing 197 acres of shrub habitat (transitional mixed mesic forest) will benefit both migratory and breeding habitat for priority refuge resources

of concern that are considered to be moderate to highest priority species in BCR 30 (ACJV 2007). Prairie warbler, one of the highest priority species, may potentially use the shrub habitat for breeding and during migration (Nolan et al. 1999). They prefer shrub habitat with an open canopy that has a low amount of vegetation. Conservation priority species, such as northern bobwhite and American woodcock, may use the shrub habitat as security cover (Keppie and Whiting 1994). Northern bobwhite is a non-migratory bird of particular concern in Virginia. It has decreased by 4 percent annually in abundance from 1966 to 2007 in Virginia resulting in a loss of nesting cover and brood range (Norman and Puckett date unknown). Also benefitting from shrub habitat would be breeding and migrating wood thrush and scarlet tanager, which also potentially use shrub habitat during the post-fledging period (Evans et al. 2011, Mowbray 1999).

We have associated the term “transitional” to the early successional forest habitat because the long-range objective is to have this habitat transition through time from grassland and shrub into mature mixed mesic forest habitat. This will occur at a rate beyond the lifetime of this CCP. Forest block size and connectivity to existing forested habitats (tidal swamp forest and mature mixed mesic forest) will increase as a result of establishing contiguous, native mature forest habitat under alternative B. Both of these factors are important to several of the current priority refuge resources of concern in objectives 1.1 and 2.1.

During the transition from grassland to mature mixed mesic forest, the area will undergo changes in habitat characteristics with a concurrent change in species present. As woody vegetation becomes established, stem density will increase, reducing open habitat and ground cover. The canopy will become closed and through time, as the trees grow, stem density will be reduced through competition. During the 15-year span of this CCP, species that use shrubby, early successional forest habitat for either breeding or migratory stopover habitat will benefit. It is likely that at the end of this CCP there will be a different suite of species utilizing early successional forest habitat than at the start. This transition will provide benefits for up to 20 years to the early successional species noted above. For example, field sparrow, which is a high priority BCR 30 species, will use habitats within one to two years after grassland management stops and shrubs begin to become established and will use the habitat for up to 10 years before local use declines due to increased woody cover (Carey et al. 2008). Conversely, gray catbird use will increase with increasing shrub density that will likely result during the second half of the lifetime of this CCP (Smith et al. 2011). Beyond the timeframe of this CCP, the eventual conversion to mature forest will benefit a different suite of breeding and migrating bird species that prefer interior forest habitat, such as scarlet tanager and wood thrush. Our objective over the long-term is to create a self-sustaining mature mixed mesic forest.

### Strategies

*Within 5 years of CCP completion:*

- Allow natural succession of native species to continue unabated on 200 acres currently in grasslands and old field.
- Encourage the establishment of native vegetation by planting native trees and shrub species where native forest succession is inhibited by site conditions or past land use practices.
- Protect trees from wildlife browsing using tubes or other techniques.
- Use volunteers, partners, and student groups in reforestation efforts.

- Expand the current area where native mixed mesic hardwood tree species have been planted in the riparian zone (approximately 22 acres).
- Maintain communications with county, State, and Federal agricultural agencies to stay current with the latest techniques and best management practices to control Johnsongrass, and other invasive species established on the refuge, including mechanical, chemical, prescribed fire, or biological control treatments. Implement those that may be feasible and appropriate on the refuge when resources allow.

**Inventory and Monitoring Activities**

- Include in an inventory and monitoring plan:
  - \* Land bird monitoring according to regional protocols using Service and citizen science partnerships.
  - \* An early detection and rapid response program to address degradation of the plant and animal communities caused by climate change and invasive species, especially those that are potentially stand-replacing invasive species.

**Objective 2.3 Grassland**

No grasslands or old field habitat would be managed under this plan.

**Discussion and Rationale**

Under this plan, our management will reduce grasslands over the long term, instead promoting contiguous, mature mixed mesic forest into the future and focusing on enhancing the integrity of the refuge’s forest to benefit several interior forest species of conservation concern identified in the forest objectives above. Maintaining a mature forest is more in keeping with the historic natural condition of the area because prior to European settlement, this area was likely forested with openings maintained primarily through anthropogenic processes (Watts 1999).

Notwithstanding the intent of this objective to allow grasslands to transition to forest, we will continue to maintain approximately 46 acres of grasslands on the refuge primarily for administrative, public use, or educational purposes. We regard this as only incidental habitat of low value to grassland birds due to its proximity to administrative sites, or because it exists as a narrow linear feature (e.g., mowed trails) where public use is concentrated diminishes its habitat quality and value to grassland birds.

**Strategies**

None.

**Inventory and Monitoring Activities**

None.

**Objective 2.4 River Escarpment**

Over the 15-year life of the plan, enhance and protect the biological integrity, diversity, and health of the refuge’s 11 acres of river escarpment to benefit resources of conservation concern, including nesting and perching bald eagles, great blue heron and other wading birds, as well as to protect cultural resources and reduce the volume of sediment delivered to the James River.

**Discussion and Rationale**

River escarpment habitat is important for the refuge because it links the aquatic habitat of the James River to the upland habitats. It is a corridor for wildlife species utilizing both the aquatic habitats and terrestrial habitats. Trees along



the river escarpment can provide perching and nesting habitat for the bald eagle, great blue heron, great egret and other wading birds, and other bird species that use the aquatic–terrestrial interface.

The Lower James River Important Bird Area, which includes Presquile NWR, has the densest concentration of bird species that eat fish as part of their diet in Virginia (Audubon 2007). This includes bald eagles, great blue herons and great egrets using the river escarpment area as staging areas for feeding and overwintering activities.

Erosion of the river escarpment is occurring along the Turkey Island Cutoff. Based on aerial photography interpretation, the average channel width was approximately 550 feet in 1968. By 2009, the average channel width from bank to bank was approximately 820 feet. A right-of-way easement was placed outside of the channel in anticipation that the cut would expand through erosion and naturally stabilize (Powell personal communication).



Cyrus Brame/USFWS

*Erosion at Turkey Island Cutoff*

Today, trees are slumping into river and sediment is entering the James River watershed. Over time, this habitat is becoming degraded. There is potential that cultural resources will become exposed and lost as more soil sloughs away from the bank. Additionally, sediment originating from the escarpment that ends up in the river continues to contribute to the James River failing to meet EPA-set sediment reduction goals (JRA 2011).

Partnerships that address the erosion issues along the river escarpment will be key to finding a solution. We anticipate meeting with stakeholders (e.g., USACE and VDEQ) to investigate shoreline management options. Among the information we need are: sediment sources, rate of sedimentation of the oxbow, shoreline erosion rate, engineering solutions if any, and the USACE's management plans and strategies affecting this channel. Our discussions and investigations with these partners will also include the implications to the long-term future of the oxbow, or original river channel. We are concerned with the possibility that this area will silt in over time, making access challenging and affecting its use and enjoyment.

USACE maintains jurisdiction of the right-of-way through the channel. They have been monitoring erosion along the channel and have expressed that it is not a concern as it relates to maintaining navigation within the right-of-way (Powell personal communication). If the erosion threatens to migrate outside of the right-of-way, then USACE would likely be receptive to working with us to assess how to mitigate further losses. Determining the right-of-way boundary will continue to be a challenge since USACE audit maps are not geo-referenced; however, maintaining a partnership and regular communications between the Service and USACE will facilitate resource protection and maintenance of the navigation channel.

The bank on the south side of the river channel on private property is experiencing similar erosion. During the boundary identification phase, we will attempt to partner with the appropriate landowner so they can understand how erosion has affected their property boundary. Our hope is that they will stay engaged during the process and be able to address the other bank at the same time we are working with the USACE to reduce or eliminate erosion and sediment deposits in the James River watershed.

We anticipate meeting with stakeholders (e.g., USACE, VDEQ, and the Virginia Institute of Marine Science) to investigate shoreline management options and potential impacts on water quality, wildlife habitat, and aquatic species resulting from erosion of the shoreline and deposition of sediments in the oxbow. Additional information will be needed to accurately assess the affected environment, including an assessment of erosion rates along the river banks, sediment source locations, sediment transport rate, sediment fate, the USACE's management plans and strategies affecting this channel, and an overview of potentially viable management options.

Investigating and implementing feasible solutions to stabilize the eroding escarpment will also include protecting cultural resources, improving important habitat features, and reducing sediment inputs to the James River and Chesapeake Bay system. During the process of evaluating feasible solutions, options may vary on what are the appropriate techniques. We will include in our evaluation a review of stabilization projects that have occurred in rivers that are similar. The best approach will balance long term stability and protecting resources with meeting the needs of the involved parties. As much as possible, a solution will incorporate a biotechnical approach that provides the necessary stability and incorporates elements of habitat improvement and ecological function. If re-vegetation is part of the plan, only native vegetation will be used.

### **Strategies**

*Continue to:*

- Control invasive plants (e.g., privet and tree-of-heaven) using herbicides and mechanical treatments.

*Within 5 years of CCP completion:*

- Work with TNC and the VNHP to identify reference sites for river escarpment.
- Partner with the USACE and local industry to investigate ways to stabilize the actively eroding river escarpment and the existing bulkhead. The area of primary concern is along the refuge's south and west borders.
- Develop and implement a shoreline management plan if feasible options are identified. Additional NEPA review, public involvement, and National Historic Preservation Act compliance may be required prior to implementation.

### **Inventory and Monitoring Activities**

- Include in an inventory and monitoring plan:

- ✱ An early detection and rapid response program to address degradation of the plant and animal communities caused by climate change and invasive species.
- ✱ Strategies to establish long-term monitoring stations to evaluate effects of climate change including tidal elevations changes in species composition, and tree mortality.

- ✱ Pursue partnership opportunities to implement the inventory and monitoring plan and expand inventory and monitoring efforts.

**GOAL 3.****Cultural Resources**

Protect and conserve the refuge's cultural resources and landscape, and seek opportunities to increase knowledge and appreciation of the refuge's history as part of the James River region.

**Objective 3.1 Cultural Resource Protection**

Over the 15-year life of the plan, improve cultural resource protection throughout the refuge to avoid unintended impacts.

**Discussion and Rationale**

The management and protection of cultural resources is an integral element in fulfilling refuge goals. To better understand the archaeological and cultural resources present at the refuge, and to help ensure impacts to those resources are avoided, the Service retained John Milner Associates, Inc. to conduct an overview study to determine the potential presence of known and predicted archaeological resources at the refuge. In the 2009 Archaeological Overview Study, John Milner Associates, Inc. confirmed that the refuge has a high potential for preserved significant archaeological resources, including sites associated with American Indian settlement and subsistence, initial settlement of the James River by Europeans beginning in 1607, plantation society, military history, and post-Civil War rural agriculture.

Service-initiated actions likely to affect archaeological and historic sites are routinely reviewed and assessed under the provisions of Section 106 of the National Historic Preservation Act. To date, projects requiring such review on the refuge have been limited; therefore, refuge lands have never had a systematic archaeological survey in their entirety.

We suspect prehistoric archaeological sites on the refuge have been severely damaged by shoreline erosion, and some may have previously eroded into the James River. Our regional archaeologist is concerned that continued shoreline erosion may threaten unknown archaeological sites on the refuge (Wilson personal communication 2011). Shoreline protection efforts we plan under objective 2.4 would also serve cultural resource protection; however, development and implementation of restoration plans would likely take more than five years to adequately prevent further shoreline erosion.

At the same time, some of the shoreline protection efforts, such as tree planting, and the promotion of forest succession on the refuge, could negatively impact archaeological sites; for example, the growing roots of trees could severely damage intact cultural levels and features (Eaton personal communication 2012). The development of a proactive National Historic Preservation Act Section 110 initiative, as described in the strategies under this objective, prior to the implementation of these management activities, would help ensure that vulnerable archaeological sites are identified and appropriate management actions are developed for the sites.

We have already begun implementing several short-term recommendations identified in the 2009 Archaeological Overview Study by John Milner Associates, Inc. because these actions are in accordance with applicable laws, regulations, and policies. The short-term recommendations in the report pertain to archaeological sites on the refuge and include:

- Ensuring that all cultural resource researchers acquire the required Archaeological Resource Protection Act permit before conducting investigations. The Service has already developed standards for this permitting process that are in agreement with the Virginia Department of Historic Resources and Department guidelines. Stipulations in the permit require producing a report of all findings within one year from when the permit was issued, including artifact inventories, as well as a curation plan. Researchers are also required to fill in their excavation units after the investigations are completed.
- Conducting a controlled surface collection in areas where refuge maintenance requires plowing, using an archaeologist approved by our RHPO, before plowing activities occur.

The overview report included several long-term recommendations for action which we include as strategies below.

### **Strategies**

*Continue to:*

- Prevent public access to locations of the refuge where cultural resources are susceptible to degradation through natural causes or human-induced impacts.
- Protect cultural resources through outreach and enforcement.

*Within 5 years of CCP completion:*

- Designate public access and use areas where cultural resource impacts can be avoided. Signage at the refuge should include a statement saying that, under the Archaeological Resources Protection Act, it is illegal to disturb, collect, or remove cultural resources from refuge property.
- Work with RHPO to develop and sponsor a proactive, National Historic Preservation Act Section 110 initiative at the refuge, which involves identifying and investigating vulnerable archaeological sites and other cultural resources.
- Partner with SHPO, Tribal representatives, USACE, and other stakeholders with cultural resource interests and Federal trust responsibilities to develop strategies that emphasize prevention and mitigation of significant cultural resource loss, if a significant site is present and is at risk of natural or human-made degradation.
- Integrate cultural resource protection efforts into other refuge programs, such as cultural resource interpretation and education.
- Complete a formal Phase I field investigation involving surface collections, shovel testing, geophysical surveys, or metal detection to identify and define the boundaries of archaeological resources within the refuge, including the former farm complex and the cemetery. These investigations should ground-truth the projected location of resources based on the historic map research.
- Conduct a walkover survey of the entire refuge with the goal of evaluating ground surfaces, locate landscape features (fence lines or roads), evidence related to pre-contact and post-contact settlements, structures, and military activity.
- Promote, through signage and publications, the significant cultural resources associated with American Indian settlement and subsistence, initial settlement of the James River by Europeans, plantation society, military history, and

post-Civil War rural agriculture that survives at the refuge. Interpretive trails could be developed that would enhance the visitor experience.

- Conduct a landscape study to record the rural landscape of refuge lands prior to Service acquisition. Information obtained will inform cultural resource outreach, education, and interpretation programs.

#### **Inventory and Monitoring Activities**

- Monitor known sites on a regular basis for looting and trespass.

### **Objective 3.2 Cultural Resource Conservation/Heritage**

Over the 15-year life of the plan, protect, conserve, and research the refuge's cultural resources to expand our understanding of the area's rich cultural history.

#### **Discussion and Rationale**

Presquile NWR is one of the few indigenous cultural landscapes in the James River east of the Fall Line that is still intact enough to demonstrate the resources the Appamattuck Indians used prior to the arrival of the English and during their trading with Captain John Smith (<http://www.2016parksummit.org/pdf/the-indigenous-cultural.pdf>; accessed April 2012).

In addition to the rationale provided under objective 3.1, the Service's Northeast Region is actively promoting the importance of connecting people with nature (<http://www.fws.gov/northeast/cpwn/>; accessed April 2012). Interpretation of cultural resources can instill a conservation ethic among the public and others who encounter or manage them, especially when told by persons of American Indian heritage and descendant community representatives.

Today there are six North American Indian Tribes represented in the area surrounding the refuge: Chickahominy, Mattaponi, Nansemond, Pamunkey, Rappahannock, and Upper Mattaponi (<http://livinglandscapeobserver.net/living-landscapes/featured-landscapes>; accessed April 2012). Presquile NWR provides an ideal place to demonstrate to the public how an appreciation of indigenous values regarding stewardship of land and wildlife can enhance public and personal attachment to the James River watershed.

Under this objective, we are seeking to:

- Translate the results of cultural research into media that can be understood and appreciated by a variety of publics.
- Engender an appreciation for the Virginia Indian cultures and perspectives about natural resources.
- Relate the connection between cultural and natural resources and the role of humans in the environment.
- Instill an ethic for the conservation of our cultural heritage.

Conserving the refuge as an indigenous cultural landscape is one way that the refuge can encourage a conservation ethic and visitors' attachment to nature. This means conserving the full landscapes in which American Indian culture existed prior to, and for some decades after, European contact, as opposed to preserving specific archaeological sites. Since American Indian culture has widespread appeal for the American public who is eager to learn about what life was like for Indians, this approach could encourage refuge visitation and help promote visitors' attachment to nature and the refuge. This approach could also

enhance efforts to protect the refuge's natural resources because it reemphasizes the American Indian values toward natural resources (Beacham 2011).

Under this plan, we are placing a greater focus on formalizing the collection of cultural history information and are seeking to strengthen partnerships with other organizations and agencies.

**Strategies**

*Continue to:*

- Maintain partnerships with local, regional, and State experts on the history of the area.
- Maintain museum collections and archival materials.

*Within 5 years of CCP completion:*

- Protect and conserve museum collections and archival materials in accordance with applicable standards.
- Collaborate with RHPO and Tribal representatives to develop and sponsor a proactive National Historic Preservation Act Section 110 initiative at the refuge for improved inventory of archaeological resources.
- Consult with the SHPO, Tribal representatives, and other stakeholders with cultural resource interests to explore opportunities to partner for the preservation, conservation, and research of the refuge's artifacts and museum properties collections and to develop interpretive experiences (e.g., trail walks in evocative indigenous cultural landscapes) that offer the indigenous perspective.
- Discuss the Service's responsibility to protect cultural resources in required documentation and in publicly available media (e.g., Web site, maps, signage, and interpretive brochures) and encourage cultural resource stewardship.
- Coordinate with local law enforcement offices to develop effective management, communications, and documentation protocols.
- Evaluate the current museum properties collection to assess potential to include artifacts or reproductions into interpretive exhibits or educational programs.
- Explore potential partnership opportunities with institutions that would allow loan of artifacts for research or educational purposes.
- As opportunities arise, record oral histories from individuals that have a relevant relationship to the area and the refuge.

**Inventory and Monitoring Activities**

- Ensure an inventory list of museum properties is filed at the refuge headquarters and at the Northeast Regional office with the regional archaeologist.

**GOAL 4.**

**Environmental Education**

Provide environmental educational experiences for visitors to inspire appreciation and stewardship of the refuge in relation to the James River watershed, the Chesapeake Bay Estuary, and the Refuge System.

**Objective 4.1 Environmental Education—On Refuge**

Over the 15-year life of the plan, provide quality environmental education programs on the refuge with specific learning objectives and diverse opportunities that:

- Meet Virginia State Standards of Learning requirements.
- Promote conservation and restoration priorities of the refuge and Chesapeake Bay watershed.
- Support the mission of the Service and Refuge System.
- Provide stewardship opportunities to participants.

**Discussion and Rationale**

Environmental education is one of the six priority wildlife-dependent recreational uses to be facilitated in the Refuge System. The majority of visitors, students, and youth groups using Presquile NWR for environmental education will be participants of the Ecology School. We describe the history of this program in more detail in chapter 3.

Currently the lack of staff resources at the refuge limits our ability to maintain a large environmental education program. To provide environmental education to the public within current resource allocation levels, we have entered into partnerships with other agencies and organizations. In December 2007, the Service signed a 20-year MOU with the JRA to develop the Ecology School at Presquile NWR. The Ecology School programming is designed to provide meaningful outdoor experiences that connect people with nature; promote an appreciation for the refuge, the Chesapeake Bay, and the James River watershed; and be consistent with Virginia Standards of Learning requirements (<http://www.doe.virginia.gov/testing/index.shtml>; accessed April 2012). In accordance with the MOU, JRA will recruit participants and coordinate the administration of the Ecology School with general oversight by the Service. The Service and JRA will cooperatively develop an annual environmental education plan that lists the dates and outlines participant activities. Overnight accommodations (i.e., tent camping or indoor lodging) on the refuge will continue to be permitted for the Ecology School upon approval of an environmental education plan and human health and safety plan. Onsite group leaders will ensure adherence to safety policies for each visiting group.

In 2012 the Northeast Regional Director approved a FONSI for the EA “Overnight Accommodations in Support of the Ecology School on Presquile NWR.” That FONSI and EA, available from refuge headquarters, provide additional details on the Ecology School.

**Strategies**

*Within 5 years of CCP completion:*

- Work with JRA to develop and implement environmental education programs through the Ecology School that integrate Virginia State Standards of Learning requirements, as appropriate by age group; convey the refuge purposes, vision, and goals for management; and promote the Captain John Smith Chesapeake NHT and CBGN, in conjunction with our MOU with the NPS.
- Develop, with JRA, the Ecology School to provide meaningful outdoor experiences that connect people with nature, with programs focused on the Refuge System, the refuge, and its resources, the Chesapeake Bay and James River watershed. Also, as part of the Ecology School program:

- \* Conduct teacher in-service training up to two times per year.
- \* Formalize partnerships with local schools, local Audubon chapter, Virginia Master Naturalist Program, and VDGIF educators; promote other potential educational partnerships that would meet the mutual goals between the Service and JRA.
- \* Develop an Office of Management and Budget-approved instrument to evaluate whether participants are learning objectives.
- \* Develop formal environmental education plans that would be reviewed annually by Service and other peer educators to ensure that programs to be offered meet stated goals.
- Support VCU summer teacher program by hosting programs on the refuge.
- Fulfill requests to offer environmental education programs on the refuge, approximately one to two times per year, which may not be associated with the Ecology School.

#### **Inventory and Monitoring Activities**

- Include monitoring activities in a visitor services plan to assess:
  - \* Visitor use, numbers, and impacts
  - \* Visitor satisfaction
  - \* Capacity limits

#### **Objective 4.2 Environmental Education—Student Participation**

Over the 15-year life of the plan, increase environmental education opportunities for up to 2,000 students (primarily from underserved and urban areas) annually using existing and new facilities on and adjacent to the refuge.

#### **Discussion and Rationale**

This objective builds on objective 4.1, focusing specifically on the Ecology School, which is also described in detail in chapter 3. The Ecology School seeks “to connect Virginia’s children to nature” and aims to annually serve up to 2,000 middle and high school students in Virginia. In particular, the Ecology School focuses on providing programming to students from underserved and urban schools. With their residential environmental education center, the Ecology School is able to hold programs nine months of the year and host middle and high school students from all over Virginia for a three-day, two-night experience on Presquile NWR. As noted under objective 4.1, all programming will be consistent with Virginia Standards of Learning requirements and focus on a variety of Chesapeake Bay and James River watershed conservation topics. For more information about the Ecology School, visit the Web site: <http://www.jamesriverassociation.org/what-we-do/education-center/> (accessed April 2012).

#### **Strategies**

*Within 5 years of CCP completion:*

- Develop an outreach plan with JRA to pique interest from urban and underserved schools that would benefit from programs offered.
- Through the Ecology School, aim to provide students with opportunities to engage in meaningful, hands-on, outdoor experiences that will:
  - \* Improve academic achievement.



- ✱ Inspire self-confidence.
- ✱ Encourage environmental leadership in the region's schools.
- ✱ Empower the next generation of environmental stewards.
- Develop and maintain classroom facilities and overnight accommodations that are safe, accessible, well-maintained, and reasonably comfortable for students, many of whom may be unaccustomed to outdoor, overnight experiences. Collaborate with JRA on the administration of the program, including the renewal of the annual permit, maintenance, and all operations of the Ecology School and its facilities.

#### **Inventory and Monitoring Activities**

- Include monitoring activities in a visitor services plan to assess:
  - ✱ Visitor use, numbers, and impacts
  - ✱ Visitor satisfaction
  - ✱ Capacity limits
  - ✱ Visitor understanding and support for Refuge System and refuge purposes and whether that leads to stewardship actions

#### **Objective 4.3 Environmental Education—Off Refuge**

Over the 15-year life of the plan, assist other agencies and organizations in their environmental education programs and events off-refuge, up to four times per year, where there are opportunities to reach large and diverse audiences, raise awareness of the Refuge System, and emphasize the refuge's resources and its contribution to conserving the James River watershed and Chesapeake Bay Estuary.

#### **Discussion and Rationale**

Off-refuge environmental education presently occurs as opportunities arise and if staff is available. We describe some of our off-refuge activities in more detail in chapter 3. Current off-refuge programming includes general information about Presquile NWR and its resources. A printed brochure has not been updated for several years and does not describe the refuge's relationship to the larger watershed context, including the Chesapeake Bay. To help expand this informal program with limited staff resources, the best opportunities include updating printed materials, strengthening existing partnerships with other agencies and organizations, and forming new relationships, to participate in events that these agencies and organizations sponsor. We will focus our efforts on events where topics are directly aligned with the refuge's vision, such as water quality in the James River or the potential impact of climate change, such as sea level rise, on bird habitat.

#### **Strategies**

*Within 5 years of CCP completion:*

- Explore opportunities to create a refuge Friends group that can support the expanded off-refuge environmental education program.
- Coordinate and collaborate with the NPS through the Captain John Smith Chesapeake NHT and CBGN, participating in the development of environmental education materials that discuss the refuge's natural and cultural resources, land conservation, public access, and citizen stewardship.

- Participate in workshops, seminars, and field trips as invited and staff resources allow.
- Develop a series of traveling educational exhibits that explain the unique biological and cultural resources and historic landscape of the refuge.

**Inventory and Monitoring Activities**

- Include in a visitor services plan:
  - ✱ Refuge resources to respond to off-refuge requests and a decision-making tool to allow for proper allocation of resources.

**GOAL 5.**

**Wildlife-Dependent Recreation**

Provide wildlife-dependent recreational opportunities (interpretation, hunting, wildlife observation, and nature photography) for visitors to enjoy and connect with nature and develop an enhanced appreciation for and understanding of the refuge's natural and cultural resources.

**Objective 5.1 Interpretation**

Over the 15-year life of the plan, enhance existing interpretive programs, displays, and materials to emphasize the unique natural and cultural resources on the refuge, the refuge's contribution to the regional conservation lands network, the implications of land use and climate change, and the importance of landscape connections along the James River and into the Chesapeake Bay. Provide additional quality programming to increase participation by approximately 20 percent over existing levels, resulting in approximately 480 annual participants.

**Discussion and Rationale**

Interpretation is one of the six priority wildlife-dependent recreational uses to be facilitated in the Refuge System. Priority public uses are to receive enhanced consideration while developing a refuge's CCP. In 2011, the Regional Chief of the Refuge System approved a compatibility determination for these uses on Presquile NWR. Existing facilities are detailed in the compatibility



Bill Wood

*Immature bald eagle*

determination, as are planned programs and other activities to support these priority public uses. This approved compatibility determination is included in appendix B. Please refer to that compatibility determination for details as to where and how these uses will be implemented on the refuge, including stipulations and access permit requirements.

A Service-led visitor services review (USFWS 2010b) recommended that the refuge expand opportunities for interpretation. Ideally, expanded interpretation activities conducted on Presquile NWR will positively contribute to appreciation and protection of migratory birds and their habitats, both on- and off-refuge. Interpretive programming will be integrated into the environmental education programming and materials, enhancing the experience for all visitors, in particular students involved in the Ecology School. Emphasis will be placed on the refuge within the lower James River system and how wildlife species may use the entire landscape, helping to expand the public understanding about habitat, migration, and ecosystems.

Interpretive materials will be developed that would connect the site to the past, providing information about the refuge prior to, during, and after European settlement and the importance of the refuge's natural resources to indigenous cultures. Information will also connect to the future, discussing issues, such as climate change, and how the refuge can serve as a reference point for altered systems or a sentinel of change.

### **Strategies**

*Continue to:*

- Maintain existing refuge interpretive programs (up to six pontoon boat trips per year) and materials (e.g., signs, brochure, and Web site).
- Advertise volunteer events in the James River Days brochure (two to three events per year).
- Work with individual groups on events on a case-by-case basis.
- Conduct up to four community and civic events per year.
- Fulfill requests for interpretive information on a case-by-case basis.
- Maintain partnerships with local groups to provide interpretive support to co-sponsored events.
- Restrict visitors to the designated trails to protect sensitive areas.

*Within 5 years of CCP completion:*

- Improve trail interpretive infrastructure, self-guided trail system materials, and refuge-sponsored tours to ensure messages are consistent about the refuge, its resources, and conservation role at local, regional, and landscape levels.
- Focus on group programs, led by the Service or partner, to better monitor where visitors go and to minimize impacts to refuge resources.
- Participate in developing interpretive and educational materials sponsored by the NPS and other partners that incorporate information about the refuge and its role in the landscape.

Off-refuge programs will depend on staff or partner availability and relationship to refuge's goals and objectives.

### **Inventory and Monitoring Activities**

- Include monitoring activities in a visitor services plan to assess:
  - \* Visitor use, numbers, and impacts
  - \* Visitor satisfaction
  - \* Capacity limits
  - \* Visitor understanding and support for Refuge System and refuge purposes, and whether that leads to stewardship actions

### **Objective 5.2 Hunting**

Over the 15-year life of the plan, maintain the current shotgun deer hunt, accommodating approximately 120 hunters annually, but include the flexibility to adjust the total number of hunt days from the current 3 days to 5 days each year to allow for better distribution of hunters over time and space. Coordinate with VDGIF to conduct periodic evaluations of habitat condition and deer herd health and modify hunt program as warranted by results. Also, evaluate opportunities to open the refuge to turkey hunting and initiate a program for youth hunters.

### **Discussion and Rationale**

The Refuge System recognizes hunting as a healthy, traditional outdoor pastime, deeply rooted in our American heritage. Hunting is one of the six priority wildlife-dependent public uses of the Refuge System as established in the 1997 Refuge Improvement Act. In addition, Presidential Executive Order 113443-Hunting Heritage, “directs Federal agencies to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.”

The following are the guiding principles of our hunting program which are based in Service policy (605 FW 2):

- (1) Manage wildlife populations consistent with Refuge System-specific management plans approved after 1997 and, to the extent practicable, State fish and wildlife conservation plans.
- (2) Promote visitor understanding of, and increase visitor appreciation for, America’s natural resources.
- (3) Provide opportunities for quality recreational and educational experiences.
- (4) Encourage participation in this tradition.
- (5) Minimize conflicts with visitors participating in other compatible, wildlife-dependent recreation.

Public hunting opportunities have been on the decline in the region as development pressures increase. Deer hunting has been allowed on the refuge since 1967 and the existing, permit-only shotgun hunt has been very popular and reasonable to manage based on the limited staff and resources available. As such, under this plan we will continue to offer a quality shotgun deer hunt on the refuge.

The current hunt occurs over a 3-day period, with up to 120 hunters allowed (40 hunters per day). The hunt program is popular and successful. Very rarely we hear concerns with overcrowding; however, with 1,000 acres of huntable and accessible land, safe spacing for 40 hunters is not a concern. Occasionally, hunters

will group around certain locations, but we take all opportunities to advise them to spread out.

Providing the opportunity to increase the number of days for the hunt will allow staff to improve the deer hunting experience by better dispersing hunters in time and space. The number of permits issued will remain at 120, effectively reducing the number of hunters per day but spreading them over a slightly longer hunting season. We will coordinate with VDGIF to conduct periodic evaluations of habitat conditions and deer herd health to better understand the impacts of the deer herd on the refuge, as well as modify the hunt accordingly as part of a management strategy.

Two other potential hunting opportunities on the refuge include opening the refuge to turkey hunting and promoting opportunities for youth to hunt. Presently, a turkey hunting program does not exist at the refuge. We recognize that there is public interest in these hunting opportunities; however, we do not currently have quality information on the turkey population. In cooperation with VDGIF, we will acquire information necessary to explore the potential to open the refuge to turkey hunting. Additional NEPA analysis and public involvement will be required before a new hunt could be implemented.

We propose to explore creating hunting opportunities for youth, assuming there is local interest and a local partner identified that is willing to provide mentors, resources, and transportation to the island. Under those conditions, we will support developing deer and/or turkey hunting opportunities for youth. This program could also be integrated into the overall environmental education program, as well as into wildlife observation and interpretation activities. We will also consider offering hunter education programs, including archery.

### Strategies

*Continue to:*

- Manage the annual 3-day, fall deer hunt on approximately 1,000 acres of the refuge, following State regulations and a few, more strict refuge-specific regulations (e.g., boat docking locations, safety measures). Provide hunters with refuge specific regulations and hunt map to encourage compliance.
- Allow hunters to scout hunting location for four days prior to quota hunter selection and hunting days.
- Require hunters to follow State reporting requirements since refuge does not operation a check station at or near the refuge.
- Receive voluntarily provided feedback from hunters to improve hunting-related communications for upcoming year.
- Maintain the waterfowl hunting closure.

*Within 5 years of CCP completion:*

- Coordinate with VDGIF to conduct a browse study and/or deer herd health evaluation, as well as making modifications to the deer hunting program based on the information acquired.
- Each year, staff will determine whether to extend the deer hunt by 2 days, for a total of 5 days, during the regular State season to provide flexibility to improve program implementation.

- Coordinate with VDGIF to acquire turkey population data and evaluate opening the refuge to turkey hunting.
- Evaluate potential opportunities with partners for, and gauge local interest in, offering deer and/or turkey hunting opportunities for youth.
- Evaluate potential opportunities with partners for, and gauge local interest in, offering youth hunter education programs on the refuge.
- Modify hunt program to include either activity, if support and interest warrants level of effort.

#### **Inventory and Monitoring Activities**

- Acquire hunt data from the State's database to monitor hunter access and deer population trends on the refuge.
- Annually conduct hunt monitoring on the refuge to assess quality of the hunt, distribution of hunters, and overall compliance of hunters with State and refuge specific regulations.
- Include monitoring activities in a visitor services plan to assess:
  - ✱ Hunter satisfaction
  - ✱ Capacity limits

#### **Objective 5.3 Wildlife Photography and Observation**

Over the 15-year life of the plan, continue to provide visitors with the opportunity to engage in wildlife observation and photography on the existing 3.5-mile trail system, observation platform, and 550-foot boardwalk, through pre-arranged, Service-led pontoon boat tours and at the visitor contact station.

#### **Discussion and Rationale**

Wildlife photography and observation are two of the six priority wildlife-dependent recreational uses identified in the 1997 Refuge Improvement Act. In 2011, the Regional Chief of the Refuge System approved a compatibility determination for these uses on Presquile NWR. Existing facilities are detailed in the compatibility determination, as are planned programs and other activities to support these priority public uses. This approved compatibility determination is included in appendix B. Please refer to that compatibility determination for details as to where and how these uses will be implemented on the refuge, including stipulations and access permit requirements.

A Service-led visitor services review (USFWS 2010b) recommended that the refuge expand opportunities for wildlife observation and photography. Ideally, expanded wildlife photography and observation activities conducted on the refuge would positively contribute to appreciation and protection of migratory birds and their habitats, both on- and off-refuge. Many of the same visitors who engage in group programs under objective 5.1 also participate in wildlife observation and photography.

We will partner with NPS to connect with visitors using the Captain John Smith Chesapeake NHT, to expand their wildlife observation opportunities. Visitors will be permitted to use the newly installed boardwalk, which will help minimize impacts. There may be short-term disturbance to common plants and wildlife during some refuge-authorized, off-trail activities, but the use will be monitored by staff and partners for potential impacts and may result in closures to ensure the effort does not result in long-term disturbance to the resource. The visitor services plan will outline methods and measures to track the potential impact of visitors to the refuge.

*Low impact boardwalk  
through the tidal  
swamp forest*



Meghan Carfio/USFWS

### Strategies

*Continue to:*

- Allow visitation for wildlife observation and photography, primarily by self-guided tours, if they prearrange (3 business days in advance) to obtain a permit. Require people to stay in designated areas.
- Maintain partnerships to provide support for refuge and partner-sponsored events.
- Offer periodic, Service-led pontoon boat tours in the James River alongside the refuge.

*Within 5 years of CCP completion:*

- Install a spotting scope to enhance the existing wildlife viewing platforms.
- Partner with NPS to support and enhance compatible wildlife viewing opportunities on the refuge through the Captain John Smith Chesapeake NHT and CBGN.
- Investigate development of wetland observation platform.
- Develop signage that communicates the significance of using designated access points and staying on designated trails for the protection of refuge resources.

### Inventory and Monitoring Activities

- Include monitoring activities in a visitor services plan to assess:
  - \* Visitor use, numbers, and impacts
  - \* Visitor satisfaction
  - \* Capacity limits
  - \* Visitor understanding and support for Refuge System and refuge purposes, and whether that leads to stewardship actions





## Chapter 5



Meghan Carfoglio/USFWS

*Public scoping meeting*

# Consultation, Coordination, and Preparation

- 5.1 Introduction
- 5.2 Planning Process
- 5.3 List of Preparers

## 5.1 Introduction

This chapter describes how we engaged others in developing this CCP. It details our efforts to encourage the involvement of the public and conservation partners, including other Federal and State agencies, county officials, civic groups, non-governmental conservation and education organizations, and user groups. It also identifies who contributed significantly to the content or writing of the plan.

According to Service policy, we must review and update our final CCP at least once every 15 years. We may need to revise it sooner, either in response to significant new information that would markedly change management direction, or if the Service Director or our Regional Director deem it necessary. If so, we will once again announce our revised planning and encourage your participation.

## 5.2 Planning Process

<b>January 24, 2011</b>	Kick-off meeting for CCP Core Team members, including representatives from the Service's Northeast Regional Office and Eastern Virginia Rivers NWR Complex, VDGIF, and Cardno JFNew (consultants).
<b>January 5, 2011 and February 3, 2011</b>	Informally discussed CCP development process and public involvement with the interagency planning team developing the James River Segment Trail Plan for the NPS Captain John Smith Chesapeake NHT.
<b>March 16, 2011</b>	Distributed planning newsletter #1.
<b>March 29, 2011</b>	Article on the Richmond Times Dispatch and The Republic.com Web sites.
<b>April 4, 2011</b>	Informal meeting with Congressman Rob Wittman included a brief discussion about the focus and development of CCP.
<b>April 5 to 7, 2011</b>	Informally discussed CCP development process and progress with attendees of Environment Virginia Symposium at Virginia Military Institute in Lexington, Virginia.
<b>April 9, 2011</b>	Informally discussed CCP development process and progress with attendees of YMCA event and volunteer day.
<b>April 14, 2011</b>	Notice of Intent to prepare CCP/EA published in the <i>Federal Register</i> .
<b>April 19, 2011</b>	Hosted a public open house scoping meeting in Chester, Virginia, along with representative from VDGIF.
<b>April 20, 2011</b>	Hosted a public open house scoping meeting in Richmond, Virginia, along with representative from VDGIF. Hosted a government and agency partners scoping meeting in Richmond, Virginia.
<b>April 22, 2011</b>	Informally discussed CCP development process and progress with attendees of Earth Day tour.
<b>May 5 to 6 and 9 to 10, 2011</b>	Informally discussed CCP development process and progress with the interagency planning team developing the James River Segment Trail Plan for the NPS Captain John Smith Chesapeake NHT.

<b>May 10, 2011</b>	Informally discussed CCP development process and progress with attendees of Chesterfield County Parks and Recreation pontoon trip.
<b>May 11, 2011</b>	Informally discussed CCP development process and progress with attendees of Presquile NWR pontoon trip.
<b>June 18, 2011</b>	Informally discussed CCP development process and progress with attendees of the Rivah Fest in Rappahannock, Virginia.
<b>June 7, 2011</b>	Informally discussed CCP development process and progress with attendees of Bermuda Hundred neighborhood meeting.
<b>June 24, 2011</b>	Distributed planning update newsletter #2, as well as scoping and issues summary.
<b>June 29, 2011</b>	Informally discussed CCP development process and progress with attendees of VCU Teacher Workshop.
<b>June 30, 2011</b>	Informally discussed CCP development process and progress with attendees of Chesterfield County Fire Department.
<b>July 26, 2011</b>	Informally discussed CCP development process and progress with attendees of VCU Summer Discovery Program.
<b>September 12, 2011</b>	Distributed draft compatibility determination regarding the four priority public uses of wildlife observation, photography, environmental education, and interpretation on the refuge for 30-day public review and comment period.
<b>September 20, 2011</b>	Informally discussed CCP development process and progress with attendees of Presquile NWR pontoon trip.
<b>September 21, 2011</b>	Informally discussed CCP development process and progress with attendees of Presquile NWR pontoon trip.
<b>September 24, 2011</b>	Informally discussed CCP development process and progress with attendees of Presquile NWR pontoon trip.
<b>October 2, 2011</b>	Informally discussed CCP development process and progress with attendees of the "GO WILD" Event at Rappahannock River Valley NWR in Warsaw, Virginia.
<b>November 28, 2011</b>	Distributed the Overnight Accommodations EA, which included the approved compatibility determination for the four priority public uses of wildlife observation, photography, environmental education, and interpretation for 30-day public review and comment period.
<b>December 8, 2011</b>	Article about the Overnight Accommodations EA in the Richmond Times Dispatch Web site.
<b>December 14, 2011</b>	Article about the Overnight Accommodations EA on the Chesterfield Observer and Village News Web sites.

<b>February 23, 2012</b>	Distributed FONSI for the Overnight Accommodations EA.
<b>February 27, 2012</b>	Article about the FONSI for the Overnight Accommodations EA on the Richmond Times Dispatch, The Republic, and WTOP Web sites.
<b>February 29, 2012</b>	Article about the FONSI for the Overnight Accommodations EA on the Village News Web site.
<b>March 8, 2012</b>	Briefed Richmond County Board of Supervisors on CCP development and progress.
<b>March 13, 2012</b>	Briefed Essex County Board of Supervisors on CCP development and progress.
<b>April 14, 2012</b>	Informally discussed CCP development and progress with attendees of volunteer work day on Presquile NWR.
<b>April 27, 2012</b>	Informally discussed CCP development and progress with attendees of Arbor Day pontoon trip around and nature walk at Presquile NWR.
<b>May 11, 2012</b>	Informally discussed CCP development and progress with attendees of International Migratory Bird Day pontoon trip around and nature walk at Presquile NWR.
<b>May 12, 2012</b>	Informally discussed CCP development and progress with attendees of canoe and kayak trip around and nature walk at Presquile NWR.
<b>May 15, 2012</b>	Informally discussed CCP development and progress with attendees of wildlife observation boat and island tour of Presquile NWR.
<b>August 8, 2012</b>	Announced the availability of draft CCP/EA in the <i>Federal Register</i> for 37 days of public review and comment. We also distributed a newsletter and published a press release announcing the public comment period and encouraging people to participate. The <i>Federal Register</i> notice, newsletter, press release and our planning Web site also announced the three open houses/public meetings we planned for August 7 and 8, 2012.
<b>August 7 and 8, 2012</b>	Hosted three open houses/public meetings in Chester, Virginia, and Richmond, Virginia. A total of 24 individuals attended the meetings. At each of the meetings, we gave a short overview of the refuge and the CCP planning process. We also recorded all the comments and suggestions provided at the meetings.
<b>August to September 2012</b>	Compiled all of the responses we received during the public comment period. In total, we received 19 written responses representing 81 individual comments.
<b>September 2012</b>	Considered all the public comments we received and drafted a response to each substantive comment. Based on these substantive comments, we reviewed and revised, where appropriate, the draft CCP/EA. Appendix F summarizes these comments and our responses to them.

**September to October 2012**

Compiled the final CCP for our Regional Supervisor, Regional Chief, and Regional Solicitor’s Office before submitting it to the Regional Director for review and approval. After approval from our Regional Director, we will publish a notice of availability in the *Federal Register* announcing that the final CCP is complete and explaining how to get a copy of the final plan.

**5.3 List of Preparers**

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## Bibliography

Meghan Carfoglio/USFWS



*An old field on the refuge*

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## **Glossary, Acronyms and Species Names**



Cyrus Brame/USFWS

*Spider webs in the grasslands*

## **Glossary, Acronyms and Abbreviations, and Species Scientific Names**

- **Glossary**
- **Acronyms and Abbreviations**
- **List of Species and their Scientific Names**

## Glossary

<b>adaptive management</b>	a process in which projects are implemented within a framework of scientifically driven experiments to test predictions and assumptions outlined within the comprehensive conservation plan. The analysis of the outcome of project implementation helps managers determine whether current management should continue as is or whether it should be modified to achieve desired conditions.
<b>abiotic</b>	nonliving; a physical feature of the environment such as climate, temperature, geology, soils.
<b>avullium</b>	an unconsolidated accumulation of stream-deposited sediments, often including sands, silts, clays, or gravels.
<b>alternative</b>	a set of objectives and strategies needed to achieve refuge goals and the desired future condition.
<b>ambient</b>	of the surrounding area or outside environment.
<b>anadromous fish</b>	fish that spend a large portion of their life cycle in the ocean and return to freshwater to breed.
<b>appropriate use</b>	a proposed or existing use on a refuge that meets at least one of the following three conditions: <ol style="list-style-type: none"><li>1. The use is a wildlife-dependent one;</li><li>2. The use contributes to fulfilling the refuge purpose(s), the System mission, or goals or objectives described in a refuge management plan approved after October 9, 1997, the date the National Wildlife Refuge System Improvement Act was signed into law; or</li><li>3. The use has been determined appropriate as specified in section 1.11 of that act.</li></ol>
<b>approved acquisition boundary</b>	a project boundary that the Director of the U.S. Fish and Wildlife Service approves upon completion of the planning and environmental compliance process. An approved acquisition boundary only designates those lands that the Service has authority to acquire or manage through various agreements. The approval of an acquisition boundary does not grant the Service jurisdiction or control over lands within the boundary, and it does not make lands within the refuge boundary part of the National Wildlife Refuge System. Lands do not become part of the Refuge System until the Service buys them or they are placed under an agreement that provides for their management as part of the Refuge System.
<b>avian</b>	of or having to do with birds.
<b>basin</b>	the surrounding land that drains into a water body.
<b>best management practice</b>	land management practices that produce desired results (usually describing forestry or agricultural practices effective in reducing non-point source pollution).

<b>biological diversity</b>	the variety of life forms and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur.
<b>biological integrity</b>	biotic composition, structure, and functioning at genetic, organism, and community levels comparable with historic conditions, including natural biological processes that shape genomes, organisms, and communities.
<b>bird conservation region</b>	ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues.
<b>brackish</b>	brackish water is water that is more salty than freshwater, but less salty than seawater. It is generally defined as water with a salinity of 0.5 to 30 dissolved salts parts per thousand.
<b>buffer</b>	lands bordering water bodies that reduce runoff and nonpoint source pollution.
<b>canopy</b>	the layer of foliage formed by the crowns of trees in a stand. For stands with trees of different heights, foresters often distinguish among the upper, middle and lower canopy layers. These represent foliage on tall, medium, and short trees. The uppermost layers are called the overstory.
<b>categorical exclusion</b>	a category of Federal agency actions that do not individually or cumulatively have a significant effect on the human environment.
<b>compatible use</b>	a wildlife-dependent recreational use, or any other use on a refuge that will not materially interfere with or detract from the fulfillment of the mission of the Service or the purposes of the refuge.
<b>compatibility determinations</b>	a required determination for wildlife-dependent recreational uses or any public uses of a refuge.
<b>Comprehensive Conservation Plan</b>	a document that describes the desired future conditions of the refuge, and specifies management direction to achieve refuge goals and the mission of the National Wildlife Refuge System.
<b>community</b>	a distinct assemblage of plants that develops on sites characterized by particular climates and soils, and the species and populations of wild animals that depend on the plants for food, cover and/or nesting.
<b>cover type</b>	the current vegetation of an area.
<b>cultural resource</b>	those parts of the physical environment—natural and built—that have cultural values to some sociocultural group or institution. Cultural resources include historic sites, archaeological sites and associated artifacts, sacred sites, buildings, and structures.
<b>diameter at breast height</b>	(dbh)—the diameter of the stem of tree measure at breast height (usually 4.5 feet above the ground). The term is commonly used by foresters to describe tree size.

<b>disturbance</b>	a disruption in the natural plant succession of a community or ecosystem resulting in a new community.
<b>early successional habitat</b>	succession is the gradual replacement of one plant community by another. In a forested ecosystem, tree cover can be temporarily displaced by natural or human disturbance (e.g., flooding by beaver, or logging). The open environments created by removal of tree cover are referred to as “early-successional” habitats because as time passes, trees will return. The open conditions occur “early” in the sequence of plant communities that follow disturbance. We define <i>early successional forest</i> in this CCP as: the shrub-sapling stage; 0 to 20 years old.
<b>ecological integrity</b>	native species populations in their historic variety and numbers naturally interacting in naturally structured biotic communities. For communities, integrity is governed by demographics of component species, intactness of landscape-level ecological processes (e.g., natural fire regime), and intactness of internal community processes (e.g., pollination).
<b>ecological succession</b>	the orderly progression of an area through time in the absence of disturbance from one vegetative community to another.
<b>ecoregion</b>	a territory defined by a combination of biological, social, and geographic criteria, rather than geopolitical considerations; generally, a system of related, interconnected ecosystems.
<b>ecosystem</b>	a dynamic and interrelated complex of plant and animal communities and their associated non-living environment.
<b>emergent marsh</b>	wetlands dominated by erect, rooted, herbaceous plants.
<b>endangered species</b>	any species of plant or animal defined through the Endangered Species Act as being in danger of extinction throughout all or a significant portion of its range, and published in the <i>Federal Register</i> .
<b>Environmental Assessment</b>	a systematic analysis to determine if proposed actions would result in a significant effect on the quality of the environment.
<b>environmental health</b>	the composition, structure, and functioning of soil, water, air, and other abiotic features comparable with historic conditions, including the natural abiotic processes that shape the environment.
<b>exotic species</b>	a species that is not native to an area and has been introduced intentionally or unintentionally by humans.
<b>extinction</b>	the termination of existence of a lineage of organisms (e.g., a subspecies or species).
<b>federally-listed species</b>	a species listed either as endangered, threatened, or species at risk (formerly a “candidate” species) under the Endangered Species Act of 1973, as amended.
<b>fragmentation</b>	the process of reducing the size and connectivity of habitat patches; the disruption of extensive habitats into isolated and small patches.



<b>geographic information system</b>	a computer system capable of storing and manipulating spatial mapping data; more commonly referred to by the acronym GIS.
<b>goals</b>	descriptive statements of desired future conditions.
<b>habitat</b>	the sum of environmental factors—food, water, cover, and space—that each species needs to survive and reproduce in an area.
<b>hectare</b>	equal to 2.47 acres.
<b>historic conditions</b>	the composition, structure, and functioning of ecosystems resulting from natural processes that we believe, based on sound professional judgment, were present prior to substantial human-related changes to the landscape.
<b>impoundment</b>	a body of water, such as a pond, confined by a dam, dike, floodgate, or other barrier, that is used to collect and hold water.
<b>interjurisdictional fish</b>	populations of fish that are managed by two or more State or national or tribal governments because of the scope of their geographic distributions or migrations.
<b>invasive species</b>	a nonnative species whose introduction causes or is likely to cause economic or environmental harm or harm to human health.
<b>issue</b>	any unsettled matter that requires a management decision. For example, a resource management problem, concern, a threat to natural resources, a conflict in uses, or in the presence of an undesirable resource condition.
<b>marl</b>	an unconsolidated sedimentary rock or soil consisting of clay and lime.
<b>migratory bird</b>	a bird species that migrates between wintering and breeding grounds.
<b>National Wildlife Refuge System</b>	all lands, waters, and interests therein administered by the U.S. Fish and Wildlife Service as wildlife refuges, wildlife ranges, wildlife management areas, waterfowl production areas, and other areas for the protection and conservation of fish, wildlife and plant resources.
<b>nonpoint source pollution</b>	a diffuse form of water quality degradation in which wastes are not released at one specific, identifiable point but from a number of points that are spread out and difficult to identify and control.
<b>objectives</b>	actions to be accomplished to achieve a desired outcome or goal. Objectives are more specific, and generally more measurable, than goals.
<b>oligohaline</b>	brackish water with between 0.5 and 3.0 parts per million salinity.
<b>physiographic area</b>	a bird conservation planning unit with relatively uniform vegetative communities, bird populations, and species assemblages, as well as land use and conservation issues, developed by Partners in Flight.
<b>point source pollution</b>	a source of pollution that involves discharge of waste from an identifiable point, such as a smokestack or sewage-treatment plant.

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<b>preferred alternative</b>	the Service's selected alternative identified in the draft CCP.
<b>prescribed burning/fire</b>	the application of fire to wildland fuels, either by natural or intentional ignition, to achieve identified land use objectives.
<b>priority public use</b>	a compatible wildlife-dependent recreational use of a refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation.
<b>range</b>	the geographic area within which a particular species is found.
<b>restoration</b>	management of a disturbed or degraded habitat that results in the recovery of its original state (e.g., restoration may involve planting native species, removing invasive shrubs, prescribed burning).
<b>riparian</b>	relating the floodplains, banks, and terraces that line rivers.
<b>riparian area</b>	habitat along the banks of a stream, river, or wetland.
<b>scoping</b>	a process for determining the scope of issues to be addressed by a comprehensive conservation plan and for identifying the significant issues. Involved in the scoping process are Federal, state, and local agencies; private organizations; and individuals.
<b>shifting mosaic</b>	an interconnected patchwork of distinct vegetation types that may shift across the land surface as a result of dynamic ecosystem processes, such as periodic wildfire or flooding.
<b>spawn</b>	the act of reproduction of fishes—the mixing of the sperm from the male fish and the eggs of a female fish.
<b>special use permit</b>	a permit authorized by the refuge manager for an activity that is not usually available to the general public.
<b>species</b>	a distinctive kind of plant or animal having distinguishable characteristics, and that can interbreed and produce young. In taxonomy, a category of biological classification that refers to one or more populations of similar organisms that can reproduce with each other but is reproductively isolated from—that is, incapable of interbreeding with—all other kinds of organisms.
<b>species richness</b>	a simple measure of species diversity calculated as the total number of species in a habitat or community.
<b>stand</b>	an easily defined area of the forest that is relatively uniform in species composition or age and can be managed as a single unit.
<b>stopover habitat</b>	habitat where birds rest and feed during migration. Also called staging area.
<b>strategies</b>	a general approach or specific actions to achieve objectives.

<b>structure</b>	the horizontal and vertical arrangement of trees and other vegetation having different sizes, resulting in different degrees of canopy layering, tree heights, and diameters within a stand.
<b>succession</b>	the natural, sequential change of species composition of a community in a given area.
<b>terrestrial</b>	living on land.
<b>threatened species</b>	those plant or animal species likely to become endangered species throughout all of or a significant portion of their range within the foreseeable future. A plant or animal identified and defined in accordance with the 1973 Endangered Species Act and published in the <i>Federal Register</i> .
<b>torpor</b>	a state of decreased activity in an animal, usually short-term, often characterized by a reduced body temperature and rate of metabolism.
<b>trust resources</b>	national resources entrusted by Congress to the U.S. Fish and Wildlife Service for conservation and protection. These “trust resources” include migratory birds, federally listed endangered and threatened species, inter-jurisdictional fishes, wetlands, and certain marine mammals.
<b>understory</b>	the lower layer of vegetation in a stand, which may include short trees, shrubs, and herbaceous plants.
<b>vernal pool</b>	depressions holding water for a temporary period in spring and other high water periods, and in which several species of amphibians lay eggs.
<b>water rights</b>	the right of a user to use water from a source such as a river, stream, pond, or groundwater source.
<b>watershed</b>	the geographic area within which water drains into a particular river, stream, or body of water. A watershed includes both the land and the body of water into which the land drains.
<b>Wilderness Area</b>	An area designated by Congress as part of the National Wilderness Preservation System.
<b>wilderness study area</b>	Lands and waters identified by inventory as meeting the definition of wilderness and being evaluated for a recommendation that they be included in the Wilderness System.
<b>wildfire</b>	an unplanned, unwanted wildland fires including unauthorized human-caused fires, escaped wildland fires, escaped prescribed fires, and all other wildland fires where the objective is to put the fire out.
<b>wildland fire</b>	any non-structure fire that occurs in the wildland. Three distinct types of wildfire fire have been defined and include wildfire, wildland fire use, and prescribed fire.
<b>wildlife-dependent recreation</b>	A use of a Refuge involving hunting, fishing, wildlife observation, wildlife photography, environmental education, or interpretation. The National Wildlife Refuge System Improvement Act of 1997 specifies that these are the six priority general public uses of the National Wildlife Refuge System.

## Acronyms and Abbreviations

<b>ADA</b>	Americans with Disabilities Act
<b>Bay Act</b>	Chesapeake Bay Preservation Act
<b>BCR</b>	Bird Conservation Region
<b>BIDEH</b>	Biological integrity, diversity, and environmental health
<b>C</b>	Celsius
<b>CBGN</b>	Chesapeake Bay Gateways and Watertrails Network
<b>CCP</b>	Comprehensive Conservation Plan
<b>CFR</b>	Code of Federal Regulations
<b>Department</b>	Department of the Interior
<b>EA</b>	Environmental Assessment
<b>Ecology School</b>	James River Ecology School
<b>EO Strategy</b>	Strategy for Protecting and Restoring the Chesapeake Bay
<b>EPA</b>	Environmental Protection Agency
<b>F</b>	Fahrenheit
<b>FONSI</b>	Finding of No Significant Impact
<b>GIS</b>	Geographic Information System
<b>HMP</b>	Habitat Management Plan
<b>HUC</b>	Hydrologic Unit Code
<b>IPCC</b>	International Panel on Climate Change
<b>JRA</b>	James River Association
<b>LEED</b>	Leadership in Energy and Environmental Design
<b>LiDAR</b>	Light Detection and Ranging
<b>MOU</b>	Memorandum of Understanding
<b>NASA</b>	National Aeronautics and Space Administration
<b>National Register</b>	National Register of Historic Places
<b>NEPA</b>	National Environmental Policy Act
<b>NHT</b>	National Historic Trail
<b>NOAA</b>	National Oceanic and Atmospheric Administration
<b>NPS</b>	National Park Service
<b>NWR</b>	National Wildlife Refuge

## Acronyms and Abbreviations

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<b>ppm</b>	Parts per Million
<b>Refuge</b>	Presquile National Wildlife Refuge
<b>Refuge Complex</b>	Eastern Virginia Rivers National Wildlife Refuge Complex
<b>Refuge Improvement Act</b>	National Wildlife Refuge System Improvement Act of 1997
<b>Refuge System</b>	National Wildlife Refuge System
<b>RHPO</b>	Regional Historic Preservation Officer
<b>RONS</b>	Refuge Operations Needs System
<b>SAMMS</b>	Service Asset Maintenance Management System
<b>SAV</b>	Submerged Aquatic Vegetation
<b>Service</b>	United States Fish and Wildlife Service
<b>SHPO</b>	State Historic Preservation Office
<b>SLAMM</b>	Sea-Level Affecting Marshes Model
<b>TNC</b>	The Nature Conservancy
<b>U.S.</b>	United States
<b>USACE</b>	United States Army Corps of Engineers
<b>USFWS</b>	United States Fish and Wildlife Service
<b>USGS</b>	United States Geological Survey
<b>VCU</b>	Virginia Commonwealth University
<b>VDCR</b>	Virginia Department of Conservation and Recreation
<b>VDEQ</b>	Virginia Department of Environmental Quality
<b>VDGIF</b>	Virginia Department of Game and Inland Fisheries
<b>VNHP</b>	Virginia Natural Heritage Program

## List of Species and their Scientific Names

<b>Common Name</b>	<b>Scientific Name</b>
Alewife	<i>Alosa pseudoharengus</i>
Alewife floater mussel	<i>Anodonta implicata</i>
American beaver	<i>Castor canadensis</i>
American beech	<i>Fagus grandifolia</i>
American bittern	<i>Botaurus lentiginosus</i>
American black duck	<i>Anas rubripes</i>
American brook lamprey	<i>Lampetra appendix</i>
American coot	<i>Fulica americana</i>
American eel	<i>Anguilla rostrata</i>
American goldfinch	<i>Spinus tristis</i>
American robin	<i>Turdus migratorius</i>
American shad	<i>Alosa sapidissima</i>
American snout	<i>Libytheana carinenta</i>
American sycamore	<i>Plantanus occidentalis</i>
American wigeon	<i>Anas americana</i>
American woodcock	<i>Scelopax minor</i>
Arrow arum	<i>Peltandra virginica</i>
Asian longhorn beetle	<i>Anoplophora glabripennis</i>
Atlantic sturgeon	<i>Acipenser oxyrinchus</i>
Bald cypress	<i>Taxodium distichum</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Banded sunfish	<i>Enneacanthus obesus</i>
Barking treefrog	<i>Hyla gratiosa</i>
Barn owl	<i>Tyto alba</i>
Bay-breasted warbler	<i>Setophaga castanea</i>
Big bluet damselfly	<i>Enallagma durum</i>
Black and white warbler	<i>Mniotilta varia</i>
Black cherry	<i>Prunus serotina</i>
Black gum	<i>Nyssa sylvatica</i>
Black locust	<i>Robinia pseudoacacia</i>
Black racer	<i>Coluber constrictor constrictor</i>
Black swallowtail	<i>Papilio polyxenes</i>

<b>Common Name</b>	<b>Scientific Name</b>
Blackburnian warbler	<i>Setophaga fusca</i>
Black-crowned night heron	<i>Nycticorax nycticorax</i>
Blister beetle	<i>Meloidae</i> spp.
Blue goose	<i>Chen caerulescens</i>
Blue jay	<i>Cyanocitta cristata</i>
Bluegill	<i>Lepomis macrochirus</i>
Blue-gray gnatcatcher	<i>Poliophtila caerulea</i>
Blue-winged teal	<i>Anas discors</i>
Bonaparte's gull	<i>Chroicocephalus philadelphia</i>
Bridle shiner	<i>Notropis bifrenatus</i>
Brown thrasher	<i>Toxostoma rufum</i>
Brown water snake	<i>Nerodia taxispilota</i>
Brown-headed nuthatch	<i>Sitta pusilla</i>
Bufflehead	<i>Bucephala albeola</i>
Cabbage white	<i>Pieris rapae</i>
Cackling goose	<i>Branta hutchinsii</i>
Canada goose	<i>Branta canadensis</i>
Canada thistle	<i>Cirsium arvense</i>
Canvasback	<i>Aythya valisineria</i>
Carolina wren	<i>Thryothorus ludovicianus</i>
Carpgrass	<i>Arthraxon hispidus</i>
Channel catfish	<i>Ictalurus punctatus</i>
Checkered white	<i>Pontia protodice</i>
Chestnut-sided warbler	<i>Setophaga pensylvanica</i>
Chimney swift	<i>Chaetura pelagica</i>
Chinese privet	<i>Ligustrum sinense</i>
Clovers	<i>Trifolium</i> spp.
Common buckeye	<i>Junonia coenia</i>
Common loon	<i>Gavia immer</i>
Common merganser	<i>Mergus merganser</i>
Common reed	<i>Phragmites australis</i>
Common yellowthroat	<i>Geothlypis trichas</i>
Copes' gray treefrog	<i>Hyla chrysoscelis</i>
Cotton mouse	<i>Peromyscus gossypinus</i>

<b>Common Name</b>	<b>Scientific Name</b>
Crab grass	<i>Digitaria</i> spp.
Creamflower tick-trefoil	<i>Desmodium ochroleucum</i>
Double-crested cormorant	<i>Phalacrocorax auritus</i>
Dunlin	<i>Chaldris alpina</i>
Eastern big-eared bat	<i>Corynorhinus rafinesquii macrotis</i>
Eastern bluebird	<i>Sialia sialis</i>
Eastern box turtle	<i>Terrapene carolina carolina</i>
Eastern cottontail rabbit	<i>Sylvilagus floridanus</i>
Eastern garter snake	<i>Thamnophis sirtalis</i>
Eastern hog-nosed snake	<i>Heterodon platirhinos</i>
Eastern kingbird	<i>Tyrannus tyrannus</i>
Eastern mole king snake	<i>Lampropeltis calligaster</i>
Eastern painted turtle	<i>Chrysemys picta picta</i>
Eastern red cedar	<i>Juniperus virginiana</i>
Eastern red-eared slider	<i>Trachemys scripta elegans</i>
Eastern spadefoot toad	<i>Scaphiopus holbrookii</i>
Eastern tailed-blue	<i>Cupido comyntas</i>
Eastern towhee	<i>Pipilo erythrophthalmus</i>
Eastern whip-poor-will	<i>Caprimulgus vociferus</i>
Eastern worm snake	<i>Carphophis amoenus</i>
Emerald ash borer	<i>Agrilus planipennis</i> Fairmaire
European privet	<i>Ligustrum vulgare</i>
European starling	<i>Sturnus vulgaris</i>
Fescue grass	<i>Festuca</i> spp.
Field sparrow	<i>Spizella pusilla</i>
Five-lined skink	<i>Eumeces fasciatus</i>
Forster's tern	<i>Sterna forsteri</i>
Fowler's toad	<i>Bufo fowleri</i>
Gadwall	<i>Anas strepera</i>
Gizzard shad	<i>Dorosoma cepedianum</i>
Glossy crayfish snake	<i>Regina rigida rigida</i>
Grasshopper sparrow	<i>Ammodramus savannarum</i>
Gray catbird	<i>Dumetella carolinensis</i>
Gray squirrel	<i>Sciurus carolinensis</i>



<b>Common Name</b>	<b>Scientific Name</b>
Great blue heron	<i>Ardea herodias</i>
Great egret	<i>Ardea alba</i>
Greater black-backed gull	<i>Larus marinus</i>
Greater scaup	<i>Aythya marila</i>
Greater yellowlegs	<i>Tringa melanoleuca</i>
Green ash	<i>Fraxinus pennsylvanica</i>
Green frog	<i>Rana clamitans</i>
Green floater mussel	<i>Lasmigonoa subviridis</i>
Green heron	<i>Butorides striatus</i>
Green June beetle	<i>Cotinis nitida</i>
Green tree frog	<i>Hyla cinera</i>
Green-winged teal	<i>Anas crecca</i>
Gypsy moth	<i>Lymantria dispar</i>
Hackberry	<i>Celtis occidentalis</i>
Hackberry emperor	<i>Asterocampa celtis</i>
Herring gull	<i>Larus argentatus</i>
Hibiscus bee	<i>Ptilothrix bombiformis</i>
Hickory shad	<i>Alosa mediocris</i>
Hooded merganser	<i>Lophodytes cucullatus</i>
Horned grebe	<i>Podiceps auritus</i>
Indigo bunting	<i>Passerina cyanea</i>
Japanese honeysuckle	<i>Lonicera japonica</i>
Japanese stilt-grass	<i>Microstegium vimineum</i>
Johnsongrass	<i>Sorghum halepense</i>
Kentucky warbler	<i>Oporornis formosus</i>
King rail	<i>Rallus elegans</i>
Killdeer	<i>Charadrius vociferous</i>
Largemouth bass	<i>Micropterus salmoides</i>
Laughing gull	<i>Larus atricilla</i>
Leafcutter bee	<i>Megachile spp.</i>
Least brook lamprey	<i>Lampetra aepyptera</i>
Least sandpiper	<i>Calidris minutilla</i>
Least skipper	<i>Ancyloxypha numitor</i>
Lesser black-backed gull	<i>Larus fuscus</i>

<b>Common Name</b>	<b>Scientific Name</b>
Lesser scaup	<i>Aythya affinis</i>
Little blue heron	<i>Egretta caerulea</i>
Little brown bat	<i>Myotis lucifugus</i>
Loblolly pine	<i>Pinus taeda</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Louisiana waterthrush	<i>Seiurus motacilla</i>
Mallard	<i>Anas platyrhynchos</i>
Marsh dewflower	<i>Murdannia keisak</i>
Marsh rabbit	<i>Sylvilagus palustris</i> Bachman
Marsh senna	<i>Chamaecrista fasciculata</i> var. <i>macrosperma</i>
Monarch	<i>Danaus plexippus</i>
Moth species	<i>Caenurgina</i> spp.
Mourning dove	<i>Zenaida macroura</i>
Mud sunfish	<i>Acantharcus pomotis</i>
Muskrat	<i>Ondatra zibethicus</i>
Northern bobwhite	<i>Colinus virginianus</i>
Northern cardinal	<i>Cardinalis cardinalis</i>
Northern diamond-backed terrapin	<i>Malaclemys terrapin terrapin</i>
Northern harrier	<i>Circus cyaneus</i>
Northern pintail	<i>Anas acuta</i>
Northern shoveler	<i>Anas clypeata</i>
Oak species	<i>Quercus</i> spp.
Ohio shrimp	<i>Macrobrachium ohione</i>
Orange sulphur	<i>Colias eurytheme</i>
Orchard grass	<i>Dactylis glomerata</i>
Pearl crescent	<i>Phyciodes tharos</i>
Peregrine falcon	<i>Falco peregrinus</i>
Perennial ryegrass	<i>Lolium perenne</i>
Pied-billed grebe	<i>Podilymbus podiceps</i>
Pine warbler	<i>Dendroica pinus</i>
Pipevine swallowtail	<i>Battus philenor</i>
Potter wasps	<i>Euodynerus</i> spp.
Prairie warbler	<i>Dendroica discolor</i>
Prothonotary warbler	<i>Protonotaria citrea</i>

<b>Common Name</b>	<b>Scientific Name</b>
Purple loosestrife	<i>Lythrum salicaria</i>
Raccoon	<i>Procyon lotor</i>
Rare skipper	<i>Problema bulenta</i>
Red admiral	<i>Vanessa atalanta</i>
Red fox	<i>Vulpes vulpes</i>
Red maple	<i>Acer rubrum</i>
Red shouldered hawk	<i>Buteo platypterus</i>
Red-bellied woodpecker	<i>Melanerpes carolinus</i>
Red-breasted merganser	<i>Mergus serrator</i>
Redhead	<i>Aythya americana</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Rice cutgrass	<i>Leersia oryzoides</i>
Ring-billed gull	<i>Larus delawarensis</i>
Ring-necked duck	<i>Aythya collaris</i>
River birch	<i>Betula nigra</i>
Ross's goose	<i>Chen rossii</i>
Ruddy duck	<i>Oxyura jamaicensis</i>
Rusty blackbird	<i>Euphagus carolinus</i>
Salt marsh cordgrass	<i>Spartina spp.</i>
Savannah sparrow	<i>Passerculus sandwichensis</i>
Scarlet tanager	<i>Piranga olivacea</i>
Sensitive joint-vetch	<i>Aeschynomene virginica</i>
Sidewalk tiger beetle	<i>Cicindela punctulata</i>
Silverspotted skipper	<i>Epargyreus clarus</i>
Silvery checkerspot	<i>Chlosyne nycteis</i>
Smallmouth bass	<i>Micropterus dolomieu</i>
Snapping turtle	<i>Chelydra serpentine</i>
Snow goose	<i>Chen caerulescens</i>
Song sparrow	<i>Melospiza melodia</i>
Sora	<i>Porzana carolina</i>
Southeastern fox squirrel	<i>Sciurus niger niger</i>
Southeastern myotis	<i>Myotis austroriparius</i> Rhodes
Southern leopard frog	<i>Lithobates sphenoccephalus utricularius</i>
Southern pine beetle	<i>Dendroctonus frontalis</i> Zimmermann

<b>Common Name</b>	<b>Scientific Name</b>
Southern red oak	<i>Quercus falcata</i>
Spicebush swallowtail	<i>Papilio troilus</i>
Spotted sandpiper	<i>Actitis macularia</i>
Spotted turtle	<i>Clemmys guttata</i>
Spring peeper	<i>Hyla crucifer</i>
Striped bass	<i>Morone saxatilis</i>
Striped skunk	<i>Mephitis mephitis</i>
Surf scoter	<i>Melanitta perspicillata</i>
Tidewater interstitial amphipod	<i>Stygobromus araeus</i>
Tennessee warbler	<i>Oreothlypis peregrina</i>
Tobacco budworm	<i>Heliothis virescans</i>
Tree of heaven	<i>Ailanthus altissima</i>
Tricolored heron	<i>Egretta tricolor</i>
Tufted titmouse	<i>Baeolophus bicolor</i>
Tundra swan	<i>Cygnus columbianus</i>
Variiegated fritillary	<i>Euptoieta claudia</i>
Velvet ant	<i>Dasymutilla</i> spp.
Virginia least trillium	<i>Trillium pusillum</i> var. <i>virginianum</i>
Virginia rail	<i>Rallus limicola</i>
White oak	<i>Quercus alba</i>
White perch	<i>Morone americana</i>
White-tailed deer	<i>Odocoileus virginianus</i>
White-throated sparrow	<i>Zonotrichia albicollis</i>
Wild rice	<i>Zizania aquatica</i>
Wild turkey	<i>Meleagris gallopavo</i>
Willow flycatcher	<i>Empidonax traillii</i>
Wilson's snipe	<i>Gallinago delicata</i>
Winter wren	<i>Troglodytes hiemalis</i>
Wood duck	<i>Aix sponsa</i>
Wood thrush	<i>Hylocichla mustelina</i>
Woodchuck	<i>Marmota monax</i>
Worm-eating warbler	<i>Helmitheros vermivorum</i>
Yellow lampmussel	<i>Lampsilis cariosa</i>
Yellow lance	<i>Elliptio lanceolata</i>

*List of Species and Their Scientific Names*

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<b>Common Name</b>	<b>Scientific Name</b>
Yellow-breasted chat	<i>Icteria virens</i>
Yellow-throated vireo	<i>Vireo flavifrons</i>
Zebra swallowtail	<i>Eurytides marcellus</i>

## Appendix A



Meghan Carfoglio/USFWS

*Tidal swamp forest*

# **Species and Habitats of Conservation Concern Known, or Potentially Occurring, on Presquile National Wildlife Refuge**

Table A.1. Species and Habitats of Conservation Concern Known, or Potentially Occurring, on Presquile National Wildlife Refuge<sup>1</sup>

Species	Seasons at Presquile NWR				Federal T&E <sup>2</sup>	VA T&E <sup>3</sup>	BCR 30 <sup>4</sup>	PIF 44 <sup>5</sup>	USFWS Birds of Conservation Concern <sup>6</sup>	Federal Trust Fish	VASWAP Priority <sup>7</sup>	North Atlantic Shorebird Plan <sup>8</sup>	North American Waterbird Plan <sup>9</sup>	Waterfowl Management Plan <sup>10</sup>	USFWS Priority Fisheries <sup>11</sup>	TNC Chesapeake Bay Lowlands Ecoregional Plan <sup>12</sup>
	Spring	Summer	Fall	Winter												
<b>WATERBIRDS</b>																
American Bittern*	x	x	x	x			M	2	X		II					2
Black-crowned Night Heron*	x	x	x	x			M				III		M			1
Bonaparte's Gull*	x		x	x									M			
Caspian Tern*	x	x	x					5					L			
Cattle Egret*	x	x	x										NR			
Clapper Rail							H	1B			IV					
Common Moorhen								5								
Double-crested Cormorant*	x	x	x	x									NR			
Forster's Tern*	x	x	x	x			H	5			IV		M			
Glossy Ibis*	x						H	5			III		L			
Great Black-backed Gull*	x		x	x									NR			
Great Blue Heron*	x	x	x	x				5					NR			1
Great Cormorant													M			
Great Egret*	x	x	x	x				5					NR			1
Green Heron*	x	x	x	x							IV		L			1
Herring Gull*	x	x	x	x									L			
Horned Grebe*	x		x	x			H		X		IV					
Iceland Gull									X				L			
King Rail*	x	x	x				M	1B			II					
Laughing Gull*	x	x	x	x									NR			
Lesser Black-backed Gull			x	x									M			
Little Blue Heron*	x	x	x				M	5			II		H			1
Pied-billed Grebe*	x		x	x				5	X							
Ring-billed Gull*	x	x	x	x									NR			

Species and Habitats of Conservation Concern Known, or Potentially Occurring, on Presquile NWR

Species	Seasons at Presquile NWR				Federal T&E <sup>2</sup>	VA T&E <sup>3</sup>	BCR 30 <sup>4</sup>	PIF 44 <sup>5</sup>	USFWS Birds of Conservation Concern <sup>6</sup>	Federal Trust Fish	VASWAP Priority <sup>7</sup>	North Atlantic Shorebird Plan <sup>8</sup>	North American Waterbird Plan <sup>9</sup>	Waterfowl Management Plan <sup>10</sup>	USFWS Priority Fisheries <sup>11</sup>	TNC Chesapeake Bay Lowlands Ecoregional Plan <sup>12</sup>
	Spring	Summer	Fall	Winter												
<b>WATERBIRDS (cont.)</b>																
Sora*	x	x	x				M									
Tricolored Heron							M	5			III		H			
Virginia Rail*	x	x	x	x							IV					
White Ibis													M			
Yellow-crowned Night Heron							M	5			III		M			
<b>WATERFOWL</b>																
American Black Duck*	x	x	x	x			HH	1B			II			D		2
American Wigeon*	x		x	x			M							I		
Black Scoter							H							D		
Blue-winged Teal*	x		x	x										I		
Bufflehead*	x		x	x			H							I		
Canvasback*	x		x	x			H							I		1
Common Goldeneye*	x		x	x			M							NT		
Common Merganser*	x		x	x										I		
Gadwall*	x		x	x			M							I		
Greater Scaup*	x		x	x			H				IV			I		
Green-winged Teal*	x		x	x			M							I		
Hooded Merganser*	x		x	x			M							I		
Lesser Scaup*	x		x	x			H							D		
Long-tailed Duck							H							D		
Mallard*	x	x	x	x			H							NT		
Northern Pintail*	x		x	x			M							D		1
Northern Shoveler*	x		x	x										I		
Red-breasted Merganser*	x		x	x			M							I		
Redhead*	x			x							III			NT		



Species	Seasons at Presquile NWR				Federal T&E <sup>2</sup>	VA T&E <sup>3</sup>	BCR 30 <sup>4</sup>	PIF 44 <sup>5</sup>	USFWS Birds of Conservation Concern <sup>6</sup>	Federal Trust Fish	VASWAP Priority <sup>7</sup>	North Atlantic Shorebird Plan <sup>8</sup>	North American Waterbird Plan <sup>9</sup>	Waterfowl Management Plan <sup>10</sup>	USFWS Priority Fisheries <sup>11</sup>	TNC Chesapeake Bay Lowlands Ecoregional Plan <sup>12</sup>
	Spring	Summer	Fall	Winter												
<b>WATERFOWL (cont.)</b>																
Ring-necked Duck*	x		x	x										I		
Ruddy Duck*	x		x	x			M							I		1
Tundra Swan*	x		x	x			H							NT		1
Wood Duck*	x	x	x	x			M							I		1
<b>LANDBIRDS</b>																
Acadian Flycatcher*	x	x	x					1B								
American Kestrel*	x		x	x				2								
Baltimore Oriole*	x	x	x				H									
Bald Eagle*	x	x	x	x		T	M	5	X		II					
Bank Swallow*	x	x	x					5								
Barn Owl*	x	x	x	x				2			III					
Barred Owl*	x	x	x	x				5								
Black-and-white Warbler*	x	x	x				H				IV					
Black-throated Green Warbler*	x	x	x								I					
Blue-winged Warbler*	x	x	x				HH	1B	X		IV					
Broad-winged Hawk*	x		x				H									
Brown Creeper*	x		x	x							IV					2
Brown Thrasher*	x	x	x	x			H	2			IV					
Brown-headed Nuthatch*	x			x			M	1B	X		IV					
Canada Warbler*	x		x				M		X		IV					
Carolina Chickadee*	x	x	x	x				2								
Cerulean Warbler*	x		x				M	1B	X		II					
Chimney Swift*	x	x	x				H	2			IV					
Chuck-will's-widow*	x	x	x					3			IV					
Cliff Swallow*	x	x						5								

Species	Seasons at Presquile NWR				Federal T&E <sup>2</sup>	VA T&E <sup>3</sup>	BCR 30 <sup>4</sup>	PIF 44 <sup>5</sup>	USFWS Birds of Conservation Concern <sup>6</sup>	Federal Trust Fish	VASWAP Priority <sup>7</sup>	North Atlantic Shorebird Plan <sup>8</sup>	North American Waterbird Plan <sup>9</sup>	Waterfowl Management Plan <sup>10</sup>	USFWS Priority Fisheries <sup>11</sup>	TNC Chesapeake Bay Lowlands Ecoregional Plan <sup>12</sup>
	Spring	Summer	Fall	Winter												
<b>LANDBIRDS (cont.)</b>																
Cooper's Hawk*	x		x	x			5									
Dickcissel*	x		x				3									
Eastern Kingbird*	x	x	x			H				IV						
Eastern Meadowlark*	x	x	x	x						IV						
Eastern Towhee*	x	x	x	x		H	2			IV						
Eastern Wood Pewee*	x	x	x				1B			IV						
Field Sparrow*	x	x	x	x		H	2			IV						
Grasshopper Sparrow*	x	x	x			M	2			IV						
Gray Catbird*	x	x	x	x		M	2			IV						
Great Crested Flycatcher*	x	x	x			H										
Kentucky Warbler*	x	x	x			H	1B	X		IV						2
Loggerhead Shrike*	x	x	x	x	T	M	5	X		I						1
Louisiana Waterthrush*	x	x	x			H	1B			IV						
Marsh Wren*	x	x	x	x		H		X		IV						
Northern Bobwhite*	x	x	x	x		H	2			IV						
Northern Flicker*	x	x	x	x		H										
Northern Harrier*	x		x	x			5			III						2
Northern Parula*	x	x	x							IV						
Northern Rough-winged Swallow*	x	x	x							IV						
Northern Saw-whet Owl										II						
Osprey*	x	x	x	x			5									
Ovenbird*	x	x	x							IV						
Peregrine Falcon*	x	x	x	x	T		5	X		I						
Prairie Warbler*	x	x	x			HH	1B	X		IV						

Species	Seasons at Presquile NWR				Federal T&E <sup>2</sup>	VA T&E <sup>3</sup>	BCR 30 <sup>4</sup>	PIF 44 <sup>5</sup>	USFWS Birds of Conservation Concern <sup>6</sup>	Federal Trust Fish	VASWAP Priority <sup>7</sup>	North Atlantic Shorebird Plan <sup>8</sup>	North American Waterbird Plan <sup>9</sup>	Waterfowl Management Plan <sup>10</sup>	USFWS Priority Fisheries <sup>11</sup>	TNC Chesapeake Bay Lowlands Ecoregional Plan <sup>12</sup>
	Spring	Summer	Fall	Winter												
<b>LANDBIRDS (cont.)</b>																
Prothonotary Warbler*	x	x	x					H	1B		IV					2
Red-headed Woodpecker*	x	x	x	x				M	2	X						
Red-shouldered Hawk*	x	x	x	x					5							
Rose-breasted Grosbeak*	x		x								IV					
Rusty Blackbird*	x		x	x				H		X	IV					
Savannah Sparrow*	x		x	x					5							
Scarlet Tanager*	x	x	x					H	2		IV					
Sedge Wren*	x		x					M	1B	X	III					
Short-eared Owl*	x		x	x				M	5	X						
Vesper Sparrow*	x	x	x						5							
Whip-poor-will*	x	x	x					H		X	IV					
White-eyed Vireo*	x	x	x						1B							
Willow Flycatcher*	x		x					H			IV					
Winter Wren*	x		x	x							II					
Wood Thrush*	x	x	x					HH	1B	X	IV					
Worm-eating Warbler*	x	x						H	1B	X	IV					2
Yellow Warbler*	x	x	x								IV					
Yellow-bellied Sapsucker*	x	x	x	x							I					
Yellow-billed Cuckoo*	x	x	x								IV					
Yellow-breasted Chat*	x	x	x						2		IV					
Yellow-rumped Warbler*	x		x	x												
Yellow-throated Warbler*	x	x	x								IV					
Yellow-throated Vireo*	x	x	x					H	1B		IV					

Species	Seasons at Presquile NWR				Federal T&E <sup>2</sup>	VA T&E <sup>3</sup>	BCR 30 <sup>4</sup>	PIF 44 <sup>5</sup>	USFWS Birds of Conservation Concern <sup>6</sup>	Federal Trust Fish	VASWAP Priority <sup>7</sup>	North Atlantic Shorebird Plan <sup>8</sup>	North American Waterbird Plan <sup>9</sup>	Waterfowl Management Plan <sup>10</sup>	USFWS Priority Fisheries <sup>11</sup>	TNC Chesapeake Bay Lowlands Ecoregional Plan <sup>12</sup>
	Spring	Summer	Fall	Winter												
<b>SHOREBIRDS</b>																
American Woodcock*	x	x	x	x			HH				IV	X				
Black-bellied Plover							H				IV	X				
Buff-breasted Sandpiper							H		X			X				
Dunlin*			x	x			H				IV					
Killdeer*	x	x	x	x			M					X				
Least Sandpiper*	x	x	x	x			M					X				
Lesser Yellowlegs*	x	x	x	x					X			X				
Pectoral Sandpiper												X				
Short-billed Dowitcher							H		X		IV					
Solitary Sandpiper*	x		x				H		X			X				
Spotted Sandpiper*	x	x	x				M					X				
Upland Sandpiper						T	M	IB	X		I	X				
<b>MAMMALS</b>																
Big Brown Bat	x	x	x	x												
Cotton Mouse	x	x	x	x							IV					
Rafinesque's Eastern Big-eared Bat	x	x	x	x		E					I					1
Southeastern Fox Squirrel											III					
<b>AMPHIBIANS</b>																
Barking Treefrog						T					II					2
Eastern Mud Salamander											IV					
Eastern Lesser Siren											III					
Eastern Spadefoot Toad											IVC					
Greater Siren											IV					
Many-lined Salamander											IV					

Species	Seasons at Presquile NWR				Federal T&E <sup>2</sup>	VA T&E <sup>3</sup>	BCR 30 <sup>4</sup>	PIF 44 <sup>5</sup>	USFWS Birds of Conservation Concern <sup>6</sup>	Federal Trust Fish	VASWAP Priority <sup>7</sup>	North Atlantic Shorebird Plan <sup>8</sup>	North American Waterbird Plan <sup>9</sup>	Waterfowl Management Plan <sup>10</sup>	USFWS Priority Fisheries <sup>11</sup>	TNC Chesapeake Bay Lowlands Ecoregional Plan <sup>12</sup>
	Spring	Summer	Fall	Winter												
<b>REPTILES</b>																
Common Rainbow Snake											IV					
Common Ribbonsnake											IV					
Eastern Box Turtle											III					
Eastern Hog-nosed Snake											IV					
Eastern Mudsnake											IV					
Eastern Slender Glass Lizard											IV					
Glossy Crayfish Snake											III					
Northern Diamond-Backed Terrapin											II					
Northern Scarletsnake											IV					
Queen Snake											IV					
Spotted Turtle											III					
Southern Chorus Frog											IV					
Yellow-Bellied Slider											IV					
<b>FISH</b>																
American Brook Lamprey											IV					
Alewife					C				X		IV				X	I
American Eel									X		IV				X	
American Shad											IV				X	I
Atlantic Sturgeon					E						II				X	I
Appalachia Darter											IV					
Banded Sunfish											IV					
Blueback Herring					C				X						X	I
Bridle Shiner											I					
Least Brook Lamprey											IV					

Species	Seasons at Presquile NWR				Federal T&E <sup>2</sup>	VA T&E <sup>3</sup>	BCR 30 <sup>4</sup>	PIF 44 <sup>5</sup>	USFWS Birds of Conservation Concern <sup>6</sup>	Federal Trust Fish	VASWAP Priority <sup>7</sup>	North Atlantic Shorebird Plan <sup>8</sup>	North American Waterbird Plan <sup>9</sup>	Waterfowl Management Plan <sup>10</sup>	USFWS Priority Fisheries <sup>11</sup>	TNC Chesapeake Bay Lowlands Ecoregional Plan <sup>12</sup>
	Spring	Summer	Fall	Winter												
<b>FISH (cont.)</b>																
Mud Sunfish											IV					
Striped Bass									X						X	I
Yellow Perch																I
<b>MOLLUSKS</b>																
Alewife Floater											IV					
Atlantic Pigtoe						T					II					
Green Floater						T					II					
Notched Rainbow											III					
Ohio Shrimp											IV					
<b>INSECTS</b>																
Diana Fritillary											IV					
Mottled Duskywing Butterfly											III					

Sources

\*Bird species confirmed on the refuge. Source: U.S. Fish and Wildlife Service. 1993. Birds of Presquile National Wildlife Refuge, Chesterfield County, Virginia. Jamestown, ND: Northern Prairie Wildlife Research Center. Accessed June 2012 at: <http://www.npwrc.usgs.govpresquil.htm>.

<sup>1</sup>List of species verified or likely to occur in habitats of or around Presquile NWR. Data compiled by U.S. Fish and Wildlife Service, Virginia Fish and Wildlife Information Service, Virginia Department of Game and Inland Fisheries, Virginia Natural Heritage Program, Virginia Herpetological Society.

<sup>2</sup>U.S. Fish and Wildlife Service. Endangered Species Program Web site. Accessed June 2012 at: <http://www.fws.gov/endangered/species/us-species.html>.  
National Oceanic and Atmospheric Administration. 2012. Office of Protected Resources Web site. Accessed June 2012 at: <http://www.nmfs.noaa.gov/pr/species/>.  
E – Federally Endangered; T – Federally Threatened; C – Federal Candidate

<sup>3</sup>Virginia Natural Heritage Program. Virginia Natural Heritage Program Web site. Accessed February 2011 at: [http://www.dcr.virginia.gov/natural\\_heritage/](http://www.dcr.virginia.gov/natural_heritage/).  
Updated June 2012–Amy Ewing Personal Communication.  
E – Endangered; T – Threatened

- <sup>4</sup>Steinkamp, M. 2008. Atlantic Coast Joint Venture. New England/Mid Atlantic Coast Bird Conservation Region Implementation Plan (BCR 30). Accessed April 2012 at: [http://www.acjv.org/BCR\\_30/BCR30\\_June\\_23\\_2008\\_final.pdf](http://www.acjv.org/BCR_30/BCR30_June_23_2008_final.pdf).  
HH – Highest Priority; H – High Priority; M – Moderate Priority
- <sup>5</sup>Watts, B. 1999. Partners in Flight. Partners in Flight: Mid-Atlantic Coastal Plain Bird Conservation Plan (Physiographic Area #44) Version 1.0. Accessed April 2012 at: [http://www.partnersinflight.org/bcps/plan/pl\\_44\\_10.pdf](http://www.partnersinflight.org/bcps/plan/pl_44_10.pdf).  
Prioritization Rankings = 1 (Highest) – 5 (Lowest).
- <sup>6</sup>U.S. Fish and Wildlife Service. 2008. Birds of conservation concern 2008. Division of Migratory Bird Management, Arlington, Virginia. 99 pp. Accessed April 2012 at: <http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf>
- <sup>7</sup>Virginia Department of Game and Inland Fisheries. Accessed February 2011. State Wildlife Action Plan. Accessed April 2012 at: <http://bewildvirginia.org/wildlifeplan>.  
Updated June 2012 – Amy Ewing Personal Communication.  
I – Critical Conservation Need; II – Very High Conservation Need; III – High Conservation Need; IV – Moderate Conservation Need
- <sup>8</sup>Clark and Niles. 2000. North American Shorebird Plan. Atlantic Flyway Priorities. Woodbine, NJ.
- <sup>9</sup>Kushlan, J.A., M.J. Steinkamp, K.C. Parsons, J. Capp, M. Acosta Cruz, M. Coulter, I. Davidson, L. Dickson, N. Edelson, R. Elliot, R.M. Erwin, S. Hatch, S. Kress, R. Milko, S. Miller, K. Mills, R. Paul, R. Phillips, J.E. Saliva, B. Sydeman, J. Trapp, J. Wheeler, and K. Wohl. 2002. Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan, Version I. Waterbird Conservation for the Americas, Washington, DC, USA. Accessed April 2012 at: [http://www.birdlife.org/action/science/species/waterbirds/waterbirds\\_pdf/nawcp\\_en.pdf](http://www.birdlife.org/action/science/species/waterbirds/waterbirds_pdf/nawcp_en.pdf).
- <sup>10</sup>Atlantic Coast Joint Venture. February 2007. North American Waterfowl Management Plan: Continental Progress Assessment. Accessed April 2012 at: <http://www.nawmprevision.org/sites/default/files/2007ContinentalAssessment.pdf>.  
Population Trend Data = I – Increasing; D – Decreasing; NT – No Trend.
- <sup>11</sup>U.S. Fish and Wildlife Service. 2009. Fisheries Priorities by HUC04.
- <sup>12</sup>The Nature Conservancy. 2002. Draft Version: Chesapeake Bay Lowlands Ecoregional Plan. 180 pp. Accessed April 2012 at: [http://conserveonline.org/docs/2007/03/CBYplan\\_070130.pdf](http://conserveonline.org/docs/2007/03/CBYplan_070130.pdf).  
1 – Primary Priority; 2 – Secondary Priority

## Appendix B



James River Association

*Environmental education students*

## Findings of Appropriateness and Compatibility Determinations

- **Collecting Natural Products**
- **Cross Country Skiing, Snowshoeing, and Sightseeing**
- **Dog Walking**
- **Geocaching**
- **Picnicking**
- **Swimming and Sunbathing**
- **Research by Non-Service personnel**
- **Public Deer Hunting**
- **Wildlife Observation, Photography, Environmental Education, and Interpretation**



# Findings of Appropriateness and Compatibility Determinations

<b>Finding of Appropriateness—Collecting Natural Products</b> . . . . .	B-3
<b>Finding of Appropriateness—Cross-country Skiing, Snowshoeing, and Sightseeing</b> . . . . .	B-5
<b>Finding of Appropriateness—Dog Walking</b> . . . . .	B-7
<b>Finding of Appropriateness—Geocaching</b> . . . . .	B-9
<b>Finding of Appropriateness—Picnicking</b> . . . . .	B-11
<b>Finding of Appropriateness—Swimming and Sunbathing</b> . . . . .	B-13
<b>Finding of Appropriateness—Research by Non-Service personnel</b> . . . . .	B-15
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<b>Compatibility Determination—Wildlife Observation, Photography, Environmental Education, and Interpretation</b> . . . . .	B-47

## APPENDIX B

### Findings of Appropriateness and Compatibility Determinations

<b>Public Use</b>	<b>Finding of Appropriateness</b>	<b>Compatibility Determination</b>
Collecting Natural Products	Not Appropriate	<i>(not required per policy)</i>
Cross Country Skiing, Snowshoeing, and Sightseeing	Not Appropriate	<i>(not required per policy)</i>
Dog Walking	Not Appropriate	<i>(not required per policy)</i>
Geocaching	Not Appropriate	<i>(not required per policy)</i>
Picnicking	Not Appropriate	<i>(not required per policy)</i>
Swimming/Sunbathing	Not Appropriate	<i>(not required per policy)</i>
Research by Non-Service Personnel	Appropriate	Compatible
Public Deer Hunting	<i>(not required per policy)</i>	Compatible
Wildlife Observation, Photography, Environmental Education, and Interpretation	<i>(not required per policy)</i>	Approved 10/10/2011

**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Presquile National Wildlife Refuge

**Use:** Collecting Natural Products

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes \_\_\_\_\_ No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate** \_\_\_\_\_

Refuge Manager:  Date: 10/3/12

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor:  Date: 10/5/12

**A compatibility determination is required before the use may be allowed.**

## **JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Presquile National Wildlife Refuge

**Use:** Collecting Natural Products

### **NARRATIVE:**

To comply with 2006 U.S. Fish and Wildlife Service (Service) policy on appropriateness, all non-priority public uses for Presquile National Wildlife Refuge (Presquile NWR, the refuge) are being evaluated. Collection of natural products for personal use or consumption includes living and non-living materials such as firewood, berries, native vegetation, deer antler sheds, amphibians, reptiles. The collection of natural products is not identified as a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). This use is considered a general public use that is not a wildlife-dependent recreational use (as defined in the Improvement Act) and does not contribute to fulfillment of refuge purposes, goals, or objectives as described in current refuge management plans. In accordance with the Appropriate Use Policy (603 FW 1), general public uses are the lowest priorities for refuge managers to consider. These uses will not be allowed on the refuge for several main reasons.

First, collecting of natural materials is prohibited on refuge lands by 50 Code of Federal Regulations (CFR) 27.51, except by special use permit.

Second, collecting natural materials does not support the biological goals and objectives for Presquile NWR, as defined in the comprehensive conservation plan for the refuge. These goals and objectives emphasize conserving habitats and species of conservation concern. Collecting natural materials also does not support the refuge's purpose as an "inviolate sanctuary...for migratory birds." Allowing visitors to collect natural materials could lead to negative impacts to migratory birds, other wildlife species, and their habitats they rely upon. Negative impacts may include trampling of vegetation and wildlife disturbance. Visitors walking off established public use trails may impact plants indirectly by compacting soils, increasing erosion, and walking on young plants, reducing survival and regeneration (Colorado State Parks 1998). Berries, native plants, and shed antlers can be important sources of food for various wildlife species and the removal of these can have adverse effects.

After evaluating these uses under Service policies, the collection of natural products for personal use or consumption will not be allowed. In summary, collecting natural materials does not support a refuge purpose, goal, or objective and would not benefit the resources within the refuge. As such, allowing this use would divert resources (staff time and funding) away from our habitat and species management priorities and priority public uses. These, and similar activities, are not appropriate public uses for the refuge.

### **LITERATURE CITED:**

Colorado State Parks. 1998. Planning trails with wildlife in mind: a handbook for trail planners prepared by Trails and Wildlife Task Force and Hellmund Associates. 51 pp. Accessed June 2012 at: <http://www.fs.fed.us/outdoors/naturewatch/start/planning/Trails-for-Wildlife-Handbk.pdf>.

**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Presquile National Wildlife Refuge

**Use:** Cross-country Skiing, Snowshoeing, and Sightseeing

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?		✓
(d) Is the use consistent with public safety?		✓
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		✓


Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:


**Not Appropriate**  **Appropriate**

Refuge Manager:  Date: 10/3/12

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor:  Date: 10/5/12

**A compatibility determination is required before the use may be allowed.**

**JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Presquile National Wildlife Refuge

**Use:** Cross-country Skiing, Snowshoeing, and Sightseeing

**NARRATIVE:**

To comply with 2006 U.S. Fish and Wildlife Service (Service) policy on appropriateness, all non-priority public uses for Presquile National Wildlife Refuge (Presquile NWR, the refuge) are being evaluated. Cross-country skiing, snowshoeing, and sightseeing are not identified as a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). These uses are considered general public uses that are not wildlife-dependent recreational uses (as defined in the Improvement Act) and do not contribute to fulfillment of refuge purposes, goals objectives as described in current refuge management plans. In accordance with the Appropriate Use Policy (603 FW 1), general public uses are the lowest priorities for refuge managers to consider. These uses have previously been found to be not appropriate for Presquile NWR in 2007.

Allowing these uses to occur on the refuge would divert refuge management resources from priority general public uses or away from our responsibilities to protect and manage fish, wildlife, and plants and their habitats.

Therefore, cross-country skiing, snowshoeing, and sightseeing are determined to be inappropriate.

**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Presquile National Wildlife Refuge

**Use:** Dog Walking

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		✓

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

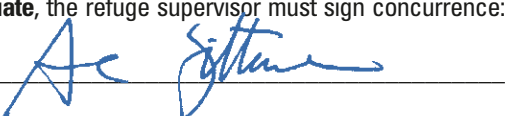
**Not Appropriate**  **Appropriate**

Refuge Manager:  Date: 10/3/12

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor:  Date: 10/5/12

**A compatibility determination is required before the use may be allowed.**

## JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

**Refuge Name:** Presquile National Wildlife Refuge

---

**Use:** Dog Walking

---

### **NARRATIVE:**

To comply with 2006 U.S. Fish and Wildlife Service (Service) policy on appropriateness, all non-priority public uses for Presquile National Wildlife Refuge (Presquile NWR, the refuge) are being evaluated. Dog walking is not identified as a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). This use is considered a general public use that is not a wildlife-dependent recreational use (as defined in the Improvement Act) and does not contribute to fulfillment of refuge purposes, goals, or objectives as described in current refuge management plans. In accordance with the Appropriate Use Policy (603 FW 1), general public uses are the lowest priorities for refuge managers to consider. Dog walking will be prohibited on the refuge for several reasons.

Dog walking does not support the biological and public use goals and objectives for Presquile NWR, as defined in the comprehensive conservation plan for the refuge. These goals and objectives emphasize conserving habitats and species of conservation concern and offering priority, wildlife-dependent recreational uses to help visitors build an appreciation and understanding for the refuge's natural and cultural resources. Dog walking also does not support the refuge's purpose as an "inviolate sanctuary...for migratory birds." Allowing dog walking on the refuge may prevent us from achieving our goals, objectives, and the refuge purpose because the presence of dogs can negatively impact migratory birds and other wildlife species, either directly through predation or indirectly by displacing wildlife species. Many wildlife species perceive dogs as natural predators, which causes them to react to the presence (visual/scent) of dogs. Common reactions include vacating and avoiding areas disturbed by dogs (Lima and Bednekoff 1999, Lenth et al. 2006). Domestic dogs can also depredate native wildlife (Gill 1994). Researchers have found that dogs displace native migratory bird species from their native habitats (Banks and Bryan 2007). Studies have also indicated that the presence of dogs on trails can decrease wildlife use within 330 feet (100 meters) of the trail (Lenth et al. 2006). Allowing dog walking may also conflict with public use goals and objectives because the displacement of wildlife by dogs could materially interfere with wildlife observation, a priority public use of the refuge.

In summary, dog walking does not support a refuge purpose, goal, or objective; would not benefit the resources within the refuge; and would not contribute to visitors' appreciation and understanding of the refuge or its resources. As such, allowing this use would divert resources (staff time and funding) away from our habitat and species management priorities and priority public uses. Based on this analysis, dog walking will be prohibited on the refuge. Existing signage indicating dogs are not permitted will be maintained and enhanced, as needed, to improve compliance. There are also many sites throughout the surrounding area that provide opportunities for accompaniment by a pet.

### **LITERATURE CITED:**

- Banks, P.B. and J.V. Bryant. 2007. Four-legged friend or foe? Dog walking displaces native birds from natural areas. *Animal Behavior* 3: 611-613.
- Gill, M. 1994. Bird flushing by dogs at proposed Eastshore State Park: Can they all just get along? *In* Contemporary Topics in Environmental Sciences. D. Sloan, E. Edlund, M. Christensen, K. Taylor, eds. U.C. Berkeley, Berkeley, Ca.
- Lenth, B., M. Brennan, and R.L. Knight. 2006. The effects of dogs on wildlife communities. Final research report submitted to Boulder County Open Space and Mountain Parks.
- Lima, S.L. and P.A. Bednekoff. 1999. Temporal variation in danger drives anti-predator behavior: the predation risk allocation hypothesis. *American Naturalist* 153:649-659.



**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Presquile National Wildlife Refuge

**Use:** Geocaching

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?		✓
(c) Is the use consistent with applicable Executive orders and Department and Service policies?		✓
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		✓


Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:


**Not Appropriate**  **Appropriate**

Refuge Manager:  Date: 10/3/12

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor:  Date: 10/5/12

**A compatibility determination is required before the use may be allowed.**

## JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

**Refuge Name:** Presquile National Wildlife Refuge

**Use:** Geocaching

### **NARRATIVE:**

To comply with 2006 U.S. Fish and Wildlife Service (Service) policy on appropriateness, all non-priority public uses for Presquile National Wildlife Refuge (Presquile NWR, the refuge) are being evaluated. Geocaching is not identified as a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). This use is considered a general public use that is not a wildlife-dependent recreational use (as defined in the Improvement Act) and does not contribute to fulfillment of refuge purposes, goals, or objectives as described in current refuge management plans. In accordance with the Appropriate Use Policy (603 FW 1), general public uses are the lowest priorities for refuge managers to consider.

For the purpose of this finding of appropriateness we define geocaching as an activity that involves the placement of a physical “cache” (i.e., hidden items) in a location where other people subsequently search for the items. Geocaching will be prohibited on the refuge for several main reasons.

First, the abandonment of property, such as placing hidden items, is prohibited on national wildlife refuges under 50 C.F.R. 27.93.

Second, geocaching is not consistent with the goals and objectives for Presquile NWR, as defined in the comprehensive conservation plan for the refuge. These goals and objectives emphasize conserving habitats and species of conservation concern and providing priority, wildlife-dependent public uses. Geocaching also does not support the refuge’s purpose as an “inviolate sanctuary...for migratory birds.” Geocaching is not consistent with these goals and objectives and the refuge’s purpose because it can negatively impact migratory birds, other wildlife species, and the habitats they rely upon. The placement of hidden items encourages visitors to leave designated public use trails and enter into closed areas where public use is restricted. Impacts include habitat damage from the trampling of vegetation and disturbance to wildlife. For example, visitors walking off established public use trails may impact plants indirectly by compacting soils, increasing erosion, and walking on young plants, reducing survival and regeneration (Colorado State Parks 1998). Visitors can also negatively impact wildlife species by causing wildlife to shift habitat use, abandon habitat (e.g., leave and/or avoid areas frequented by humans), to abandon their nests, or increase energy demands (Knight and Cole 1991, Hammitt and Cole 1998). Also, humans walking off trail have been shown to cause greater disturbance (greater area of influence, flush distance, and distance moved) to wildlife than walking within trail corridors (Miller et al. 2001).

In summary, geocaching does not support a refuge purpose, goal, or objective; would not benefit the resources within the refuge; and would not contribute to visitors’ appreciation and understanding of the refuge or its resources. As such, allowing this use would divert resources (staff time and funding) away from our habitat and species management priorities and priority public uses. After evaluating geocaching under Service policies, this activity will not be allowed.

### **LITERATURE CITED:**

- Colorado State Parks. 1998. Planning trails with wildlife in mind: a handbook for trail planners prepared by Trails and Wildlife Task Force and Hellmund Associates. 51 pp. Accessed June 2012 at: <http://www.fs.fed.us/outdoors/naturewatch/start/planning/Trails-for-Wildlife-Handbk.pdf>.
- Hammitt, W.E. and D.N. Cole. 1998. Wildland Recreation. John Wiley & Sons, New York, 361pp.
- Knight, R.L. and D.N. Cole. 1991. Effects of recreational activity on wildlife in wildlands. Transactions of the 56th North American Wildlife and Natural Resources Conference pp.238-247.
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**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Presquile National Wildlife Refuge

**Use:** Picnicking

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?		✓
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		✓


Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes \_\_\_\_\_ No ✓.

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

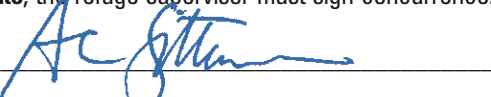
**Not Appropriate** ✓ **Appropriate** \_\_\_\_\_

Refuge Manager:  Date: 10/3/12

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor:  Date: 10/5/12

**A compatibility determination is required before the use may be allowed.**

## JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

**Refuge Name:** Presquile National Wildlife Refuge

**Use:** Picnicking

### **NARRATIVE:**

To comply with 2006 U.S. Fish and Wildlife Service (Service) policy on appropriateness, all non-priority public uses for Presquile National Wildlife Refuge (Presquile NWR, the refuge) are being evaluated. Picnicking is not identified as a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). This use is considered a general public use that is not a wildlife-dependent recreational use (as defined in the Improvement Act) and does not contribute to fulfillment of refuge purposes, goals, or objectives as described in current refuge management plans. In accordance with the Appropriate Use Policy (603 FW 1), general public uses are the lowest priorities for refuge managers to consider. Picnicking has previously been found to be inappropriate for the Presquile NWR in 2007. Picnicking will continue to not be allowed on Presquile NWR for several main reasons.

First, allowing picnicking is not consistent with the goals and objectives for Presquile NWR, as outlined in the refuge's comprehensive conservation plan. These goals emphasize conserving habitats and species of conservation concern. Picnicking also does not support the refuge's purpose as an "inviolable sanctuary... for migratory birds." Allowing picnicking could negatively impact migratory birds, other wildlife species, and habitats by causing soil compaction and vegetation trampling, increasing the frequency and extent of wildlife disturbance, and introducing trash and food waste which could result in wildlife conflicts, feeding of wildlife, and potential death to wildlife who ingest trash and food waste.

Second, the refuge does not have adequate staff, resources, or facilities to administer this use. The refuge does not provide the amenities for picnicking activities, such as picnic tables, shelters, trash containers, or grills. In addition, the refuge does not have the resources to manage a picnic area or program. Due to the logistics and safety of transportation to and from this island refuge, it would detract from refuge staff's responsibilities to protect and manage fish, wildlife, and plants and their habitats, as well as detracting from administering priority uses. The workload for the maintenance and other staff would increase. Law enforcement duties would also increase to ensure compliance. While it is listed in an approved 1991 Public Use Management Plan, this plan is outdated and will be revised subsequent to the refuge's comprehensive conservation plan.

In summary, picnicking does not support a refuge purpose, goal, or objective; would not benefit the resources within the refuge; and would not contribute to visitors' appreciation and understanding of the refuge and its resources. As such, allowing this use would divert resources (staff time and funding) away from our habitat and species management priorities and priority public uses.

Although organized picnicking is prohibited, this does not preclude visitors from bringing food with them for nutrition or safety while they participate in other appropriate and compatible activities on the refuge.

**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Presquile National Wildlife Refuge

**Use:** Swimming and Sunbathing

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?		✓
(d) Is the use consistent with public safety?		✓
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		✓


Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes \_\_\_\_\_ No ✓.

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate** ✓ **Appropriate** \_\_\_\_\_

Refuge Manager:  Date: 10/3/12

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor:  Date: 10/5/12

**A compatibility determination is required before the use may be allowed.**

## **JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Presquile National Wildlife Refuge

**Use:** Swimming and Sunbathing

### **NARRATIVE:**

To comply with 2006 U.S. Fish and Wildlife Service (Service) policy on appropriateness, all non-priority public uses for Presquile National Wildlife Refuge (Presquile NWR, the refuge) are being evaluated. Swimming and sunbathing are not identified as a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). This use is considered a general public use that is not a wildlife-dependent recreational use (as defined in the Improvement Act) and does not contribute to fulfillment of refuge purposes, goals, or objectives as described in current refuge management plans. In accordance with the Appropriate Use Policy (603 FW 1), general nonpriority and secondary public uses are lower priority considerations for refuge managers. Swimming and sunbathing will not be allowed on the refuge for several main reasons.

First, allowing swimming and sunbathing is not consistent with public safety. The refuge's shoreline along the Turkey Island Cutoff channel are high (20 feet) bluffs of unconsolidated and largely unvegetated sand, gravel, and clays that have been eroding into the river over the years and pose a safety concern for visitors.

Second, allowing swimming and sunbathing does not support any of the goals and objectives for Presquile NWR, as outlined in the comprehensive conservation plan for the refuge. These goals and objectives emphasize conserving habitats and wildlife species of conservation concern. Swimming and sunbathing also do not support the refuge's purpose as an "inviolable sanctuary...for migratory birds." Allowing swimming and sunbathing could negatively impact sensitive habitats, migratory birds, and other wildlife species because the eroding banks and the surrounding tidal marshes are inhabited by plants and wildlife that are sensitive to human disturbance.

Swimming and sunbathing will be prohibited on the refuge. Swimming and sunbathing are not consistent with Service policy on secondary uses and is not consistent with any approved refuge management plan. Also, swimming and sunbathing do not support a refuge purpose, goal, or objective; would not benefit the resources within the refuge; and would not contribute to visitors' understanding and appreciation of the refuge and its resources. As such, allowing this use would divert resources (staff time and funding) away from our habitat and species management priorities and priority public uses. Also, ample swimming and sunbathing opportunities exist within the Richmond metropolitan area.

**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Presquile National Wildlife Refuge

**Use:** Research by Non-Service Personnel

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager:  Date: 10/3/12

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor:  Date: 10/5/12

**A compatibility determination is required before the use may be allowed.**

## **JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Presquile National Wildlife Refuge

**Use:** Research by Non-Service Personnel

### **NARRATIVE:**

Research conducted by non-U.S. Fish and Wildlife Service (Service) personnel is not identified as a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997. This use is not a priority public use of the National Wildlife Refuge System (Refuge System). However, research by non-Service personnel is often conducted by colleges and universities; Federal, State, and local agencies; nongovernmental organizations; and qualified members of the general public. Research on Presquile National Wildlife Refuge (Presquile NWR, the refuge) would further the understanding of the natural environment and could be applied to the management of refuge wildlife. Research by others outside of the Service adds greatly to the information base for refuge managers to make informed decisions.

All research proposals are evaluated for their benefits to the refuge and the Refuge System mission. The refuge manager will issue a special use permit for all approved research projects. All research projects require the principal investigator to provide summary reports of findings and acknowledge the refuge for their participation. The refuge reserves the right at any time to find a specific request for a research project by non-Service personnel to be inappropriate or incompatible with the refuge's purposes, Service mission or the refuge's conservation management goals and objective established in the comprehensive conservation plan (CCP) and any stepped down management plan, based on each individual review and assessment of each project's research details.

Not all research may be appropriate. Some research may affect fish, wildlife, and plants in a manner neither consistent with refuge management plans nor compatible with refuge purposes or the Refuge System mission. Some research may interfere with or preclude refuge management activities, appropriate and compatible public uses, or other research. Some research may be appropriate off the refuge, but not on the refuge. For example, some natural and physical research may not be wildlife-dependent and may be accomplished successfully at locations off the refuge. Because not all research supports the establishing purposes of refuges or the Refuge System mission, we cannot define research as a refuge management activity. Therefore, we must evaluate each research proposal independently and may deny a request for a special use permit because we find the proposal to be inappropriate or incompatible.

Certain common research activities are evaluated explicitly in the compatibility determination. Any request for research would require issuance of a special use permit issued by the Service. At the time of request, a determination will be made by the refuge manager (or his or her designee) whether the research benefits the understanding of the natural environment and will contribute useful information to the Service and Refuge System. The entire refuge may be open and available for scientific research. An individual research project is usually limited to a particular habitat type, plant or wildlife species. On occasion, research projects will encompass an assemblage of habitat types, plants, or wildlife. The research location will be limited to those areas of the refuge that are absolutely necessary to conduct of the research project.

The timing of the research will depend entirely on the individual research projects approved design. Scientific research would be allowed to occur on the refuge throughout the year. An individual research project could be short term in design, requiring one or two visits over the course of a few days. Other research projects could be multiple year studies that require daily visits to the study site. The timing of each individual research project will be limited to the minimum required to complete the project. Certain common research activities are described explicitly in the compatibility determination.

The methods of the research will depend entirely on the individual research project that is conducted. The methods of each research project will be scrutinized well before it will be allowed to occur on the refuge. No research project will be allowed to occur if it does not have an approved scientific method, causes considerable negative impacts on wildlife and habitat, or compromises public health and safety. Certain common research activities are described explicitly in the compatibility determination.



Presquile NWR is an unstaffed satellite refuge administered by the Eastern Virginia Rivers NWR Complex. No additional equipment, facilities, or improvements will be necessary to allow research by non-Service personnel. Staff time would be required to review research proposals and oversee permitted projects. Conducting these activities will require less than 10 percent of a work-year for one staff member.

Disturbance to wildlife and vegetation by researchers could occur through observation and accessing the study area by foot. It is possible that direct mortality could result as a byproduct of research activities. Mist-netting for example, can cause stress, especially when birds are captured, banded, and weighed. There have been occasional mortalities to birds, namely when predators, such as raccoons and cats, reach the netted birds before researchers do.

Minimal impacts may occur when previously approved research projects are carried out according to the stipulations stated in the special use permit issued for each project. Overall, however, allowing well-designed and properly reviewed research to be conducted by non-Service personnel is likely to have very little impact on refuge wildlife populations. If the research project is conducted with professionalism and integrity, potential adverse impacts are likely to be outweighed by the knowledge gained about a species, habitat, or public use.

After evaluating research by non-Service personnel under Service policies, we conclude that the activity is appropriate as it contributes to and supports refuge management, purposes, and goals, and the mission of the Refuge System.

## COMPATIBILITY DETERMINATION

### **USE:**

Research by Non-Service Personnel

### **REFUGE NAME:**

Presquile National Wildlife Refuge

### **ESTABLISHING AND ACQUISITION AUTHORITY(IES):**

Presquile National Wildlife Refuge (Presquile NWR, refuge) was established on March 7, 1953, under the Migratory Bird Conservation Act (16 U.S.C. 715d) of February 18, 1929 (45 Stat. 1222) authority to “(2) acquire, by gift or devise, any area or interests therein” that the Secretary of the Interior “determines to be suitable for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” The tract was gifted from A.D. Williams for use as a wildlife refuge in 1952.

### **REFUGE PURPOSE(S):**

In accordance with the Migratory Bird Conservation Act, the purpose of Presquile NWR is “...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.”

### **NATIONAL WILDLIFE REFUGE SYSTEM MISSION:**

The mission of the National Wildlife Refuge System (Refuge System) is “to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966 [16 U.S.C. 668dd-668ee], as amended by the National Wildlife Refuge System Improvement Act of 1997 [NWR SIA][Public Law 105-57]).

### **DESCRIPTION OF USE:**

#### **(a) What is the use? Is it a priority public use?**

The use is research conducted by non-U.S. Fish and Wildlife Service (Service) personnel. This use includes research conducted by Federal, state, and private entities, such as the U.S. Geological Survey, State departments of natural resources, students and professors at State and private universities, and independent non-government researchers and contractors. Research conducted by non-Service personnel is not a priority public use of the Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

Although this use is not a priority public use, this activity would allow permitted researchers access to the refuge’s natural environment to conduct both short-term and long-term research projects.

The refuge issues special use permits allowing non-destructive research studies that investigate biological, physical, and/or social issues and concerns to address refuge management information needs, or enhance understanding of trust resources. We define non-destructive research as research that does not permanently harm or kill individual fish and wildlife, does not permanently adversely affect fish or wildlife populations, and not permanently altering habitat. The following five specific, ongoing research projects are specifically covered under this compatibility determination (CD):

1. The Christmas Bird Count, a volunteer-based winter bird survey, conducted by the Hopewell Chapter of the National Audubon Society.
2. American black duck (*Anas rubripes*) population monitoring research conducted by the Virginia Department of Game and Inland Fisheries (VDGIF) and the Atlantic Coast Joint Venture (ACJV).
3. Breeding study of prothonotary warblers (*Protonotaria citrea*) conducted by Virginia Commonwealth University (VCU).
4. Amphibian and reptile survey and health assessments conducted by the Virginia Herpetological Society (VHS).
5. Atlantic sturgeon (*Acipenser oxyrinchus*) population monitoring and mortality research conducted by VCU.

Additional requests for special use permits for research will be considered on a case-by-case basis, as staff availability allows. In accordance with 16 U.S.C. 668dd(d) and 50 C.F.R. Part 25, Subpart D, the refuge manager is responsible for reviewing applications for special use permits and determining whether to authorize a proposed use. Prior to being approved, the refuge manager must first find the use “appropriate,” and then “compatible” with the refuge purposes and Refuge System mission.

The refuge manager will base the decision to issue a special use permit for research on his or her professional judgment and the value of the proposed research. The decision to allow a particular research project will also be consistent with Service regulations and policy, including the Policy on Maintaining the Biological Integrity, Diversity, and Environmental Health of the Refuge System (66 Fed. Reg. 3810 (2001); 601 FW 3). The results of the research should result in better knowledge of our natural resources and improve methods to manage, monitor, and protect the refuge’s biological resources and public uses.

The refuge manager will always have the discretion to deny or reevaluate the appropriateness and compatibility of any specific “research by non-Service personnel” request at any time [603 FW 2.1 H(1), (2)]. The refuge manager may deny a project based on his or her sound professional judgment based on field experiences, knowledge of the refuge’s natural resources, particularly its biological resources, available scientific information, and after consulting with other experts, both inside and outside the Service.

When denying a request for a specific research project, the refuge manager will explain the rationale and conclusions supporting their decision in writing. The rationale for the denial will be consistent with the principles of sound fish and wildlife management, refuge administration, and applicable laws. The denial will generally be based on evidence that the details of a particular research project might lead to the impairment of our conservation mission, detracts from fulfilling the refuge’s purposes, conflicts with the conservation goals or objectives in an approved refuge management plans, is not manageable with the available budget or staff time, is inconsistent with public safety, or conflicts with maintaining or restoring the biological integrity, diversity, and environmental health of the refuge’s habitats involved in the research project.

**(b) Where would the use be conducted?**

The location of the research will vary depending on the individual research project that is being conducted. The entire refuge may be made available for scientific research. An individual research project is usually limited to a particular habitat type, plant, or wildlife species. Occasionally, research projects will encompass an assemblage of habitat types, plants, or wildlife, or may span more than one refuge or include lands outside the Refuge System. The research location will also be limited to those areas of the refuge that are absolutely necessary to conduct the research project. The refuge may limit areas available to research as necessary to ensure the protection of trust resources or reduce conflict with other compatible refuge uses. Access to study locations will be identified by refuge staff.

The following list provides more details on where the four research projects specifically covered under this CD will occur:

- Christmas Bird Count – Research occurs in all habitat types throughout the refuge.
- VDGIF and ACJV’s American black duck research – Research occurs in swamp and interior creeks on the refuge.

- VCU's prothonotary warbler research – Research occurs along forested riparian areas along two refuge channels.
- VHS's amphibian and reptile survey and health assessments – Research and surveys occur primarily in the refuge's forested riparian areas and wetlands along the James River.
- VCU's Atlantic sturgeon research – Atlantic sturgeon captured from the James River are transported by boat to the refuge's cable ferry ramp, then transported to the nearby holding tank for processing.

**(c) When would the use be conducted?**

The timing of the research will depend on the individual research project's approved design. Scientific research may be allowed to occur on the refuge throughout the year, when there are no time-of-year restrictions. Time-of-year restrictions ensure compliance with purposes for which the refuge was established; and specifically, to protect threatened or endangered species and species of concern, and to prevent conflicts with other refuge public uses (e.g., public deer hunt) or management activities (e.g., prescribed burn). Special precautions will be required and enforced to ensure the researchers' health and safety and to minimize or eliminate potential conflicts with a priority public use.

An individual research project could be short-term in design, requiring one or two visits over the course of a few days. Other research projects could be multiple year studies that require daily visits to the study site. The timing of each individual research project will be limited to the minimum required to complete the project.

The following list provides more details on when the four research projects specifically covered under this CD will occur:

- Christmas Bird Count – Annually; one day during early winter.
- VDGIF and ACJV's American black duck research – Annually since 2010; during late winter (January through the end of February).
- VCU's prothonotary warbler research – Annually (starting in 1987); during the breeding season.
- VHS's amphibian and reptile survey and health assessments – Annually since about 2006; typically two to three visits during late spring and summer (May through July).
- VCU's Atlantic sturgeon research – Annually since 2011; primarily in the fall (mid-September through mid-October) and in the spring (April and May).

**(d) How would the use be conducted?**

The methods of the research will depend entirely on the individual research project that is conducted. The methods of each research project will be reviewed and scrutinized before it will be allowed to occur on the refuge. No research project will be allowed to occur if:

- It does not have an approved scientific method.
- It negatively impacts endangered species, migratory birds, and other refuge trust resources.
- It compromises public health and safety.

A research application (FWS Form 3-1383-R: National Wildlife Refuge System Research and Monitoring Special Use Application and Permit) and detailed research proposal that follows Presquile NWR study proposal guidelines (see attachment I) will be required from parties interested in conducting research on the refuge.

Once approved, projects will be reviewed annually to ensure that they are meeting their intended purposes and are fulfilling the mission of the Refuge System and purposes for which the refuge was established.

The following list provides more details on how the four research projects specifically covered under this CD will occur:

- Christmas Bird Count – Volunteer field observations (point counts) of birds wintering on the refuge.

- VDGIF and ACJV's American black duck research – Researchers capture black ducks using cannon nets and then band, and record vital rates of individuals. Researchers then use bands to help track movement of individuals.
- VCU's prothonotary warbler research – Researchers monitor over 283 artificial nest boxes on the refuge, including observing nesting activity and weighing, measuring, banding, and taking blood samples (to test for parasites and mercury levels) of nestlings.
- VHS's amphibian and reptile survey and health assessments – Researchers survey observe and record observations of amphibians and reptiles using cover boards, drift fences, funnel and pitfall traps. Some individuals are also examined for evidence of parasites, infections, lesions, or deformities, which may include taking blood samples, conducting biopsies on lesions, and pit tagging individuals before releasing them.
- VCU's Atlantic sturgeon research – Researchers capture Atlantic sturgeon for determining sex, weighing, measuring, and tagging with ultrasonic tracking tags (either surgically implanted or attached externally), and noting injuries (if applicable).

**(e) Why is this use being proposed?**

Research by non-Service personnel is conducted by colleges, universities, Federal, State, and local agencies, non-governmental organizations, and qualified members of the general public to further the understanding of the natural environment and to improve the management of the refuge's natural resources. Much of the information generated by the research is applicable to management on and near the refuge. In many cases, research by non-Service personnel ensures the perception of un-biased and objective information gathering which can be important when using the research to develop management recommendations for politically sensitive issues. Additionally, universities and other Federal partners can access equipment and facilities unavailable to refuge staff for analysis of data or biological samples.

The Service will encourage and support research and management studies on refuge lands that will improve and strengthen natural resource management decisions. The refuge manager will encourage and seek research relative to approved refuge objectives that clearly improves land management and promotes adaptive management. Priority research addresses information that will better manage the Nation's biological resources and is generally considered important to: agencies of the Department of Interior; the Service, the Refuge System, and state fish and game agencies. Priority research also addresses important management issues or demonstrates techniques for management of species or habitats.

The refuge will also consider research for other purposes which may not be directly related to refuge-specific objectives, but contribute to the broader enhancement, protection, use, preservation, and management of native populations of fish, wildlife, and plants, and their natural diversity within the region or flyway. The refuge will maintain a list of research needs that will be provided to prospective researchers or organizations upon request. Refuge support of research directly related to refuge objectives may take the form of funding, in-kind services such as housing or use of other facilities, direct staff assistance with the project in the form of data collection, provision of historical records, conducting management treatments, or other assistance as appropriate.

Research was first determined to be a compatible use on the refuge in June 1994. The refuge manager renewed the determination that research is an appropriate and compatible use on Presquile NWR in a finding of appropriateness, signed on December 7, 2006, and a compatibility determination signed on February 22, 2007.

All research proposals are unique and require individual review and consideration. One example of a research project conducted by non-Service personnel found to be compatible at Presquile NWR is a long-term study of the reproductive activities and success of prothonotary warblers along the James River. Researchers from VCU's Rice Center have been studying these neotropical migratory birds at Presquile NWR, adjacent non-NWR sites in Virginia, and in Panama since 1987. The research effort has resulted in publication of 12 manuscripts in scientific journals, 5 graduate theses, and 8 undergraduate research projects. This research has significantly contributed to the body of scientific knowledge about this species' breeding ecology, feeding behaviors, and parasite burden, as well as offering clues about how climate change may affect this species.

**AVAILABILITY OF RESOURCES:**

The bulk of the cost for research is incurred in staff time to review research proposals, coordinate with researchers and write special use permits. In some cases, a research project may only require one day of staff

time to write a special use permit. In other cases, a research project may take an accumulation of weeks, as the refuge biologist must coordinate with students and advisors and accompany researchers during site visits. Because research conducted on the refuge is not constant, there may be fiscal years when little if any time is spent on managing outside research projects by refuge staff. This support includes review of the proposal by the refuge manager and biologist, consultation and coordination with principal researcher and field staff, issuance of special use permit, review of progress reports and other daily operational communications (table B.1).

**Table B.1. Current Annual Administrative Costs Associated with Research by Non-Service Personnel**

Activities	Resource	Annual Duration	Rate <sup>1</sup>	Cost
Proposal review, coordination, and SUP preparation	Refuge Manager (GS-13)	4 hours	\$50 / hour	\$200
	Deputy Refuge Manager (GS-12)	4 hours	\$42 / hour	\$168
	Wildlife Biologist (GS-11)	8 hours	\$35 / hour	\$280
	Wildlife Refuge Specialist (GS-11)	8 hours	\$35 / hour	\$280
Field assistance, evaluating resource impacts	Wildlife Refuge Specialist (GS-11)	10 hours	\$35 / hour	\$350
	Wildlife Biologist (GS-11)	20 hours	\$35 / hour	\$700
Use of facilities		40 days	\$5 / day	\$200
Use of equipment	Vehicle or watercraft	4 days	\$20 / day	\$80
<b>TOTAL</b>				<b>\$2,258</b>

*Note: Some actions and resulting costs also support approved public uses (i.e., hunt program).*

<sup>1</sup> In 2012 dollars, full performance salary at GS-Step 6 or WG-Step 3.

Based on existing refuge expenditures for habitat management, funding is adequate to ensure compatibility and to administer and manage the subject use.

**ANTICIPATED IMPACTS OF THE USE:**

*Short-term impacts:*

Research activities may disturb fish and wildlife and their habitats. For example, the presence of researchers can cause waterfowl to flush from resting and feeding areas, cause disruption of birds on nests or breeding territories, or increase predation on nests and individual animals as predators follow human scent or trails. Efforts to capture animals, such as for migratory bird banding, can cause disturbance, injury, or death to groups of wildlife or to individuals. To wildlife, the energy cost of disturbance may be appreciable in terms of disruption of feeding, displacement from preferred habitat and the added energy expended to avoid disturbance.

The removal of vegetation or sediments by core sampling methods, a common method for use in wetland research, can cause increased localized turbidity and disrupt non-target plants and animals. Sampling activities associated with many types of research activities can cause compaction of soils and the trampling of vegetation. Installation of posts, equipment platforms, collection devices and other research equipment in open water may present a hazard if said items are not adequately marked and/or removed at appropriate times or upon completion of the project. Research efforts may also discover methods that result in a reduction in impacts described above.

The potential for user conflicts is minimal with research projects conducted on the refuge. Generally, most research occurs within areas closed to other uses and away from public use trails and facilities. During hunting seasons, hunters may encounter researchers in the field, or observe monitoring plots or other research infrastructure. However, these encounters will be infrequent due to the typically minimal presence of field technicians and interest in maintaining low profile infrastructure to prevent disturbance or vandalism of study sites.

*Long-term impacts:*

Long-term effects should generally be beneficial by gaining information valuable to refuge management. No long-term negative impacts are expected from the research activities described. The refuge manager can reduce

the likelihood of long-term impacts by denying special use permits for research that is likely to cause long-term, adverse impacts. Also, permits for multi-year research projects are renewed annually, providing the opportunity for an analysis of any impacts before renewing the special use permit.

*Cumulative impacts:*

Cumulative impacts would occur if multiple research projects were occurring on the same resources at the same time or if the duration of the research is excessive. In particular, the refuge must consider the potential impacts of non-Service research, in conjunction with any Service-sponsored research also taking place. However, no cumulative impacts are expected because refuge manager can control the potential for cumulative impacts through special use permits, prohibiting multiple research projects from affecting any given area or species at one time. The refuge manager retains the option to deny proposals for research on that does not contribute to the mission of the Refuge System or causes undue disturbance or harm to refuge resources. The refuge manager also retains the right to revoke or deny renewal for any special use permit if unanticipated short-term, long-term, or cumulative impacts occur.

Project-specific stipulations outlined in each special use permit will act to minimize anticipated impacts of research projects. These stipulations will prevent impacts to refuge wetlands, water quality, soils, hydrology, fish, wildlife, or habitat. Projects which occur within the habitat of, or include direct monitoring of, threatened and endangered species will be subject to a Section 7 informal consultation with the Service's Virginia Field Office under the Endangered Species Act (87 Stat. 854, as amended; 16 U.S.C. 1531 et seq.). Only with the approval of the Section 7 consultation will the refuge permit research to be conducted on habitats or individuals of threatened and endangered species. Research that could adversely affect critical habitat or threatened and endangered wildlife will not be permitted.

**PUBLIC REVIEW AND COMMENT:**

As part of the comprehensive conservation planning process for Presquile NWR, this compatibility determination underwent extensive public review, including a comment period of 37 days following the release of the draft comprehensive conservation plan and environmental assessment.

**DETERMINATION (CHECK ONE BELOW):**

- Use is not compatible
- Use is compatible, with the following stipulations

**STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

- The criteria for evaluating a research proposal, outlined in the “Description of Use” section above, will be used when determining whether a proposed study will be approved on the refuge. If proposed research methods are evaluated and determined to have potential adverse impacts on refuge wildlife or habitat, then the refuge would determine the utility and need of such research to conservation and management of refuge wildlife and habitat. If the need was demonstrated by the research permittee and accepted by the refuge, then measures to minimize potential impacts (e.g., reduce the numbers of researchers entering an area, restrict research in specified areas) would be developed and included as part of the study design and on the special use permit. Special use permits will contain specific terms and conditions that the researcher(s) must follow relative to activity, location, duration, and time-of-year restrictions to ensure continued compatibility. All refuge rules and regulations must be followed unless alternatives are otherwise accepted in writing by refuge management.
- The Service will require all researchers to submit FWS Form 3-1383-R: National Wildlife Refuge System Research and Monitoring Special Use Application and Permit (<http://www.fws.gov/forms/3-1383-R.pdf>; accessed May 2012) and a detailed research proposal that follows Presquile NWR study proposal guidelines (see attachment I) and Service Policy (FWS Refuge Manual chapter 4, section 6). Researchers must give us at least 45 days to review proposals before the research begins. If the research involves the collection of wildlife, the refuge must be given 60 days to review the proposal. Researchers must obtain all necessary scientific collecting or other permits before starting the research. We will prioritize and approve proposals based on the need, benefit, compatibility, and funding required for the research.

- The refuge manager (or his/her designee) will issue special use permit for all research conducted by non-Service personnel. The special use permit will list all conditions necessary to ensure compatibility. The special use permit will also identify a schedule for annual progress reports and the submission of a final report or scientific paper.
- Refuge staff may ask our regional refuge biologists, other Service divisions, State agencies, or academic experts to review and comment on proposals. We will require all researchers to obtain appropriate State and Federal permits.
- Extremely sensitive wildlife habitat areas would be avoided unless sufficient protection from research activities (i.e., disturbance, collection, capture, and handling) is implemented to limit the area and/or wildlife potentially impacted by the proposed research. Where appropriate, some areas may be temporarily or seasonally closed so that research would be permitted when impacts to wildlife and habitat are less of a concern. Research activities will be modified to avoid harm to sensitive wildlife and habitat when unforeseen impacts arise.
- Any research project may be terminated at any time for non-compliance with the special use permit conditions. Research projects may also be modified, redesigned, relocated, or terminated at any time upon determination by the refuge manager that the project is causing unanticipated adverse impacts to wildlife, wildlife habitat, approved priority public uses, or other refuge management activities. Refuge staff will conduct annual reviews of the research project to monitor researcher activities for potential impacts to the refuge and for compliance with conditions on the special use permit. The refuge manager may terminate previously approved research and special use permits if adverse impacts are observed or if the researcher is not in compliance with the stated conditions.
- The Service expects researchers to submit a final report to the refuge upon completing their work. For long-term studies, we may also require interim progress reports. We also expect that research will be published in peer-reviewed publications. All reports, presentations, posters, articles, or other publications will acknowledge the Refuge System and Presquile NWR as partners in the research.

**JUSTIFICATION:**

The Service encourages research on national wildlife refuges to collect new information which will improve the quality of refuge and other Service management decisions, to expand the body of scientific knowledge about fish and wildlife, their habitats, the use of these resources, appropriate resource management, and the environment in general, and to provide the opportunity for students and others to learn the principles of field research.

In accordance with 50 CFR 26.41, research conducted by non-Service personnel, as described in this compatibility determination, will not materially interfere with, or detract from, the fulfillment of the Refuge System mission or the purposes for which the refuge was established.

**SIGNATURE:** Refuge Manager:  10/3/12  
(Signature and Date)

**CONCURRENCE:** Regional Chief:  10/5/2012  
(Signature and Date)

**MANDATORY 10 YEAR RE-EVALUATION DATE:** 10/5/2022

**LITERATURE CITED:**

U.S. Fish and Wildlife Service. 1999. Director's Order No. 109: Use of Specimens Collected on Fish and Wildlife Lands. March 30, 1999.



## ATTACHMENT I

### *Presquile National Wildlife Refuge Study Proposal Guidelines*

A study proposal is a justification and description of the work to be done, and includes cost and time requirements. The proposals must be specific enough to serve as blueprints for the investigation. They must spell out in advance systematic plans for the investigation at a level of detail commensurate with the cost and scope of the project and the needs of management. Proposals should be submitted electronically as a Microsoft® Word® document or hard copy to the refuge manager.

The following list provides a general outline of first-order headings/sections for study proposals:

- Cover Page
- Table of Contents (for longer proposals)
- Abstract
- Statement of Issue
- Literature Summary
- Objectives/Hypotheses
- Study Area
- Methods and Procedures
- Quality Assurance/Quality Control
- Specimen Collections
- Deliverables
- Special Requirements, Concerns, Necessary Permits
- Literature Cited
- Peer Review
- Budget
- Personnel and Qualifications

#### *Cover Page*

The cover page must contain the following information:

- Title of proposal
- Current date
- Investigator(s)—name, title, organizational affiliation, address, telephone and fax numbers and e-mail address of all investigators or cooperators
- Proposed starting date
- Estimated completion date
- Total funding support requested from the U.S. Fish and Wildlife Service
- Signatures of principal investigator(s) and other appropriate institutional officials

#### *Abstract*

The abstract should contain a short summary description of the proposed study, including reference to major points in the sections “Statement of Issue,” “Objectives,” and “Methods and Procedures.”

#### *Statement of Issue*

Provide a clear precise summary of the problem to be addressed and the need for its solution. This section should include statements of the importance, justification, relevance, timeliness, ability to be generalized, and contribution of the study. Describe how any products will be used, including any anticipated commercial use. What is the estimated probability of success of accomplishing the objective(s) within the proposed timeframe?

#### *Literature Summary*

This section should include a thorough but concise literature review of current and past research that pertains to the proposed research, especially any pertinent research conducted at the Presquile National Wildlife Refuge (NWR). A discussion of relevant legislation, policies, and refuge planning and management history, goals, and objectives should also be included.

### *Objectives/Hypotheses*

A very specific indication of the proposed outcomes of the project should be stated as objectives or hypotheses to be tested. Project objectives should be measurable. Provide a brief summary of what information will be provided at the end of the study and how it will be used in relation to the problem. These statements should flow logically from the statement of issue and directly address the management problem.

Establish data quality objectives in terms of precision, accuracy, representativeness, completeness, and comparability as a means of describing how good the data need to be to meet the project's objectives.

### *Study Area*

Provide a detailed description of the geographic area(s) to be studied and include a clear map delineating the proposed study area(s) and showing specific locations where work will occur.

### *Methods and Procedures*

This section should describe as precisely as possible, how the objectives will be met or how the hypotheses will be tested. Include detailed descriptions and justifications of the field and laboratory methodology, protocols, and instrumentation. Explain how each variable to be measured directly addresses the research objective/hypothesis. Describe the experimental design, population, sample size, and sampling approach (including procedures for sub-sampling). Summarize the statistical and other data analysis procedures to be used. List the response variables and tentative independent variables or covariates. Describe the experimental unit(s) for statistical analysis. Also include a detailed project time schedule that includes start, fieldwork, analysis, reporting, and completion dates.

### *Quality Assurance/Quality Control*

Adequate quality assurance/quality control procedures help ensure that data and results are:

- Credible and not an artifact of sampling or recording errors.
- Of known quality.
- Able to stand up to external scientific scrutiny.
- Accompanied by detailed method documentation.

Describe the procedures to be used to ensure that data meet defined standards of quality and program requirements, errors are controlled in the field, laboratory, and office, and data are properly handled, documented, and archived. Describe the various steps (e.g., personnel training, calibration of equipment, data verification and validation) that will be used to identify and eliminate errors introduced during data collection (including observer bias), handling, and computer entry. Identify the percentage of data that will be checked at each step.

### *Specimen Collections*

Clearly describe the kind (species), numbers, sizes, and locations of animals, plants, rocks, minerals, or other natural objects to be sampled, captured, or collected. Identify the reasons for collecting, the intended use of all the specimens to be collected, and the proposed disposition of collected specimens. For those specimens to be retained permanently as voucher specimens, identify the parties responsible for cataloging, preservation, and storage, as well as the proposed repository.

### *Deliverables*

The proposal must indicate the number and specific format of hard and/or electronic media copies to be submitted for each deliverable. The number and format will reflect the needs of the refuge and the refuge manager. Indicate how many months after the project is initiated (or the actual anticipated date) that each deliverable will be submitted. Deliverables are to be submitted or presented to the refuge manager.

Deliverables that are required are as follows:

### *Reports and Publications*

Describe what reports will be prepared and the timing of reports. Types of reports required in fulfillment of natural and social science study contracts or agreements include:

- Progress report(s) (usually quarterly, semiannually, or annually; may be required)
- Draft final and final report(s) (always required)

A final report must be submitted in addition to a thesis or dissertation (if applicable) and all other identified deliverables. Final and draft final reports should follow refuge guidelines (attachment I).

In addition, investigators are encouraged to publish the findings of their investigations in refereed professional, scientific publications and present findings at conferences and symposia. The refuge manager appreciates opportunities to review manuscripts in advance of their publication.

### *Data Files*

Provide descriptions of any spatial (Geographic Information Systems [GIS]) and non-spatial data files that will be generated and submitted as part of the research. Non-spatial data must be entered onto CD-ROMs in Microsoft Access or Microsoft Excel. Spatial data, which includes Global Positioning System (GPS)-generated files, must be in a format compatible with the refuge's GIS system (ArcGIS 8 or 9, Arcview 3.3, or e00 format). All GIS data must be in UTM 19, NAD 83. A condition of the permit will be that the Service has access to and may utilize in future mapping and management all GIS information generated.

### *Metadata*

For all non-spatial and spatial data sets or information products, documentation of information (metadata) describing the extent of data coverage and scale, the history of where, when, and why the data were collected, who collected the data, the methods used to collect, process, or modify/ transform the data, and a complete data dictionary must also be provided as final deliverables. Spatial metadata must conform to Service (FGDC) metadata standards.

### *Oral Presentations*

Three types of oral briefings should be included: pre-study, annual, and closeout. These briefings will be presented to refuge staff and other appropriate individuals and cooperators. In addition, investigators should conduct periodic informal briefings with refuge staff throughout the study whenever an opportunity arises. As appropriate or commensurate with the study's complexity and number of visits anticipated, researchers should provide verbal updates on project progress to refuge staff. Frequent dialogue between researchers and refuge staff is an essential element of a successful research project.

### *Specimens and Associated Project Documentation*

A report on collection activities, specimen disposition, and the data derived from collections must be submitted to the refuge following refuge guidelines.

### *Other:*

Researchers must provide the refuge manager with all of the following:

- Copies of field notes/notebooks/datasheets
- Copies of raw data (in digital format), including GIS data, as well as analyzed data
- Copies of all photos (digital photos preferred), slides, videos, and films
- Copies of any reports, theses, dissertations, publications or other material (such as news articles) resulting from studies conducted on refuge
- Detailed protocols used in study
- Aerial photographs
- Maps/GIS data

- Interpretive brochures and exhibits
- Training sessions (where appropriate)
- Survey forms
- Value-added software, software developed, and models

Additional deliverables may be required of specific studies.

### *Special Requirements, Permits, and Concerns*

Provide information on the following topics where applicable. Attach copies of any supporting documentation that will facilitate processing of your application.

### *Refuge Assistance*

Describe any refuge assistance needed to complete the proposed study, such as use of equipment or facilities or assistance from refuge staff. It is important that all equipment, facilities, services, and logistical assistance expected to be provided by the Service be specifically identified in this section so all parties are in clear agreement before the study begins.

### *Ground Disturbance*

Describe the type, location, area, depth, number, and distribution of expected ground-disturbing activities, such as soil pits, cores, or stakes. Describe plans for site restoration of significantly affected areas.

Proposals that entail ground disturbance may require an archaeological survey and special clearance prior to approval of the study. You can help reduce the extra time that may be required to process such a proposal by including identification of each ground disturbance area on a U.S. Geological Survey 7.5-minute topographic map.

### *Site Marking and/or Animal Marking*

Identify the type, amount, color, size, and placement of any flagging, tags, or other markers needed for site or individual resource (e.g., trees) identification and location. Identify the length of time it is needed and who will be responsible for removing it. Identify the type, color, and placement of any tags placed on animals (see special use permit for stipulations on marking and handling of animals).

### *Access to Study Sites*

Describe the proposed method and frequency of travel to and within the study site(s). Explain any need to enter restricted areas. Describe the duration, location, and number of participants, and approximate dates of site visits.

### *Use of Mechanized and Other Equipment*

Describe any vehicles, boats, field equipment, markers, or supply caches by type, number, and location. You should explain the need to use these materials and how long they are to be left in the field.

### *Safety*

Describe any known potentially hazardous activities, such as electro-fishing, scuba diving, whitewater boating, aircraft use, wilderness travel, and wildlife capture, handling, or immobilization.

### *Chemical Use*

Identify chemicals and hazardous materials that you propose using within the refuge.

Indicate the purpose, method of application, and amount to be used. Describe plans for storage, transfer, and disposal of these materials and describe steps to remediate accidental releases into the environment. Attach copies of Material Safety Data Sheets (MSDS).

### *Animal Welfare*

If the study involves animals, describe your protocol for any capture, holding, marking, tagging, tissue sampling, or other handling of these animals (including the training and qualifications of personnel relevant to animal handling and care). If it is required that your institutional animal welfare committee review your proposal, please include a photocopy of their recommendations. Describe alternatives considered, and outline procedures to be used to alleviate pain or distress. Include contingency plans to be implemented in the event of accidental injury to or death of the animal. Include State and Federal permits. Where appropriate, coordinate with and inform State natural resource agencies.

### *Literature Cited*

List all reports and publications cited in the proposal.

### *Peer Review*

Provide the names, titles, addresses, and telephone numbers of individuals with subject-area expertise who have reviewed the research proposal. If the reviewers are associated with the investigator's research institution, or if the proposal was not reviewed, please provide the names, titles, addresses, and telephone numbers of three to five potential subject-area reviewers who are not associated with the investigator's institution. These individuals will be asked to provide reviews of the proposal, progress reports, and the draft final report.

### *Budget*

The budget must reflect both funding and assistance that will be requested from the Service and the cooperator's contributions on an identified periodic (usually annual) basis.

### *Personnel Costs*

Identify salary charges for principal investigator(s), research assistant(s), technician(s), clerical support, and others. Indicate period of involvement (hours or months) and pay rate charged for services. Be sure to include adequate time for data analysis and report writing and editing.

### *Fringe Benefits*

Itemize fringe benefit rates and costs.

### *Travel*

Provide separate estimates for fieldwork and meetings. Indicate number of trips, destinations, estimated miles of travel, mileage rate, air fares, days on travel, and daily lodging and meals charges. Vehicle mileage rate cannot exceed standard government mileage rates if Federal funds are to be used. Charges for lodging and meals are not to exceed the maximum daily rates set for the locality by the Federal Government (contact Presquile NWR for appropriate rates).

### *Equipment*

Itemize all equipment to be purchased or rented and provide a brief justification for each item costing more than \$1,000. Be sure to include any computer-related costs. For proposals funded under a Service agreement or contract, the refuge reserves the right to transfer the title of purchased equipment with unit cost of \$1,000 or more to the Federal Government following completion of the study. These items should be included as deliverables.

### *Supplies and Materials*

Purchases and rentals under \$1,000 should be itemized as much as is reasonable.

### *Subcontract or Consultant Charges*

All such work must be supported by a subcontractor's proposal also in accordance with these guidelines.

### *Specimen Collections*

Identify funding requirements for the cataloging, preservation, storage, and analyses of any collected specimens that will be permanently retained.

### *Printing and Copying*

Include costs for preparing and printing the required number of copies of progress reports, the draft final report, and the final report. In general, a minimum of two copies of progress reports (usually due quarterly, semiannually, or as specified in agreement), the draft final report, and the final report are required.

### *Indirect Charges*

Identify the indirect cost (overhead) rate and charges and the budget items to which the rate is applicable.

### *Cooperator's Contributions*

Show any contributing share of direct or indirect costs, facilities, and equipment by the cooperating research institution.

### *Outside Funding*

List any outside funding sources and amounts.

### *Personnel and Qualifications*

List the personnel who will work on the project and indicate their qualifications, experience, and pertinent publications. Identify the responsibilities of each individual and the amount of time each will devote. A full vita or resume for each principal investigator and any consultants should be included here.

## **Interim Final Report Guidelines**

Draft final and final reports should follow Journal of Wildlife Management format, and should include the following sections:

- Title Page
- Abstract
- Introduction/Problem Statement
- Study Area
- Methods (including statistical analyses)
- Results
- Discussion
- Management Implications
- Management Recommendations
- Literature Cited

## COMPATIBILITY DETERMINATION

### **USE:**

Public Deer Hunting

### **REFUGE NAME:**

Presquile National Wildlife Refuge

### **ESTABLISHING AND ACQUISITION AUTHORITY(IES):**

Presquile National Wildlife Refuge (Presquile NWR, refuge) was established on March 7, 1953, under the Migratory Bird Conservation Act (16 U.S.C. 715d) of February 18, 1929 (45 Stat. 1222) authority to (2) “acquire, by gift or devise, any area or interests therein” that the Secretary of the Interior “determines to be suitable for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” The tract was gifted from A.D. Williams for use as a wildlife refuge in 1952.

### **REFUGE PURPOSE(S):**

In accordance with the Migratory Bird Conservation Act, the purpose of Presquile NWR is “...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.”

### **NATIONAL WILDLIFE REFUGE SYSTEM MISSION:**

The mission of the National Wildlife Refuge System (Refuge System) is “to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966 [16 U.S.C. 668dd-668ee], as amended by the National Wildlife Refuge System Improvement Act of 1997 [NWRISA][Public Law 105-57]).

### **OTHER APPLICABLE LAWS, REGULATIONS, AND POLICIES:**

- The Property Clause of the U.S. Constitution Article IV 3, Clause 2
- The Commerce Clause of the U.S. Constitution Article 1, Section 8
- Executive Order 12996, Management and General Public Use of the National Wildlife Refuge System, March 25, 1996
- Antiquities Act of 1906 (34 Stat. 225)
- Migratory Bird Treaty Act of 1918 (15 U.S.C. 703-711; 40 Stat. 755)
- Migratory Bird Conservation Act of 1929 (16 U.S.C. 715r; 45 Stat. 1222)
- Criminal Code Provisions of 1940 (18 U.S.C. 41)
- Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d; 54 Stat. 250)

- Refuge Trespass Act of June 25, 1948 (18 U.S.C. 41; 62 Stat. 686)
- Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j; 70 Stat. 1119)
- Refuge Recreation Act of 1962 (16 U.S.C. 460k-460k-4; 76 Stat. 653)
- Land and Water Conservation Fund Act of 1965
- National Historic Preservation Act of 1966, as amended (16 U.S.C. 470, et seq.; 80 Stat. 915)
- National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd, 668ee; 80 Stat. 927)
- National Environmental Policy Act of 1969, NEPA (42 U.S.C. 4321, et seq.; 83 Stat. 852)
- Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.; 87 Stat. 884)
- Refuge Revenue Sharing Act of 1935, as amended in 1978 (16 U.S.C. 715s; 92 Stat. 1319)
- Archaeological Resources Protection Act of 1979
- Emergency Wetlands Resources Act of 1986 (S.B.740)
- Native American Graves Protection and Repatriation Act of 1990
- North American Wetlands Conservation Act of 1990
- Food Security Act (Farm Bill) of 1990, as amended (HR 2100)
- The National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57, U.S.C. 668dd)
- Title 50, Code of Federal Regulations, Parts 25-33 (50 CFR 25-33)
- National Wildlife Refuge Regulations for the Most Recent Fiscal Year (50 CFR Subchapter C; 43 CFR 3101.3-3)

## **DESCRIPTION OF USE:**

### **(a) What is the use? Is the use a priority public use?**

The use is the public hunting of white-tailed deer on the refuge. Hunting was identified as one of six priority public uses by Executive Order 12996 (March 25, 1996) and by the Refuge System Improvement Act.

### **(b) Where would the use be conducted?**

The use will continue to occur on approximately 1,229 acres of the 1,329-acre island refuge (figure B.1), with access provided on the 3.5-mile trail network and stationary/temporary docking locations (figure B.2). A “no-hunt zone” of approximately 100 acres has been identified to protect people and property on the refuge, as well as on the waters and properties adjacent to the refuge.

Approximately 500 acres of mesic forest, swamp, and grassland habitat is open to deer hunting and is easily accessible. The remaining areas open to hunting (729 acres) include backwaters, marsh, and swamp habitat. These areas offer the type of quality hunt desired by some deer hunters, including reasonable harvest opportunities, un-crowded conditions, fewer conflicts among hunters, relatively undisturbed wildlife, and limited interference from, or dependence on, mechanized aspects of the sport.

### **(c) When would the use be conducted?**

The use would be conducted in designated areas of the refuge in accordance with Federal, State, and County regulations. Hunting would take place on three to five days of the Commonwealth of Virginia’s shotgun season



for white-tailed deer hunting (<http://www.dgif.virginia.gov/hunting>; accessed June 2012). Dates for hunting on Presquile NWR are chosen by refuge staff on an annual basis. Public deer hunting on the refuge occurs between the opening day of shotgun season through to the beginning of eagle nest building season (typically mid-November through mid-December). Tides and staff availability are factors considered when determining annual hunting dates.

Permitted hunters may access the refuge during legal hunting hours of one half-hour before sunrise to one half-hour after sunset (usually 4 a.m. to 7 p.m.), in accordance with the Commonwealth's hunting regulations. Hunters must exit the refuge by 7 p.m. on their hunt day.

**(d) How would the use be conducted?**

Hunting will occur according to Commonwealth of Virginia's regulations and will be subject to refuge-specific regulations, according to the Federal regulations published in Title 50 of the Code of Federal Regulations (50 CFR 32.66). However, the refuge manager may, upon annual review of the hunting program and in coordination with the Virginia Department of Game and Inland Fisheries (VDGIF), impose further restrictions on hunting, recommend that the refuge be closed to hunting, or further liberalize hunting regulations within the limits of state seasons and regulations. We may restrict hunting if it conflicts with other, higher priority refuge programs or endangers refuge resources or public safety.

In 2011, the U.S. Fish and Wildlife Service (Service) established a Memorandum of Agreement (MOA #503130-11K006) with VDGIF to administer a quota hunt at the refuge. This agreement will be effective for five years and renewed as appropriate. VDGIF works through a contractor (currently CyberData Technologies, Inc., NY) to process hunter applications, make equitable and random selections of hunters to participate in the hunt, notify all applicants about the selection outcome, and provide applicant contact information to the Service. A processing fee of \$7.50 is currently charged to each applicant by the VDGIF contractor as reimbursement for services provided; this fee may be modified in the future.

Refuge quota hunts are advertised on the refuge and VDGIF Web sites (currently found at <http://www.fws.gov/northeast/presquile> and <http://www.dgif.virginia.gov/hunting/quotahunts>, respectively; accessed June 2012); in the annual "Hunting & Trapping in Virginia" regulations digest, published by VDGIF; and in local publications (e.g., Chesterfield Observer and Richmond Times-Dispatch newspapers). Participation instructions are included in these announcements. A limited number of scouting days prior to the application deadline are offered to help interested parties determine if they want to submit an application to hunt on the refuge.

Individuals selected to participate in the annual hunt may bring a guest, if previously identified on the hunt application. Up to 120 hunters participate in the refuge hunt annually. The individual and guest (if applicable) selected to participate in the annual hunt must each complete a "White-tailed Deer Refuge-specific Hunting Permit Conditions" form, which details requirements of the hunt as identified in 50 CFR 32.66; the 2010 version of this form is included in this compatibility determination (attachment 1). A refuge hunt permit fee of \$10.00 is charged to each hunter; this fee may be modified in the future.

Once refuge staff receive the signed permit conditions form and associated fee payment, refuge staff issue a permit and provide additional information about the hunt (e.g., refuge hunt map [see figure B.2], details about additional scouting dates). The deer hunting permit is issued by the refuge to the selectee for one designated hunt day; their designated hunt date is specified on the non-transferrable permit. The permit allows for harvest of white-tailed deer by shotgun only. Under State regulations, a limit of two deer per day (either sex) is allowed, provided the hunter's license has harvest tags available. This limit may change under future State regulations.

Hunters must access refuge lands from designated access points, and hunting is prohibited in "no hunt zones" (figure B.2). Site selection and spacing is determined by the individual hunter. Portable tree stands are the only type of tree stand permitted for use during the hunt day and must be removed at the end of each hunt day. Hunters are solely responsible for the retrieval and transport of harvested deer back to their boat. No motorized or mechanized vehicles, such as off-road vehicles, are allowed on refuge property.

All persons participating in the refuge hunt must have a valid State hunting license and refuge permit in their possession while on the refuge. Hunters are required to wear at least 400 square inches of solid-colored, hunter-orange clothing or material in a conspicuous manner on the head, chest, or back.

Prohibited activities include:

- The use of “man drives,” defined as individual or group efforts intended to “push” or “jump” deer for the purposes of hunting.
- Discharging a weapon within 300 feet of any building.
- Possessing a loaded weapon on road, in watercraft, or in “no hunt zones.”
- Docking watercraft outside of designated areas.
- Hunting with dogs.
- Use or possession of alcohol.
- Creating fires.

All hunters that successfully harvest deer are to check their game through a State game checking system. Hunters receive a confirmation number for verification of the check-in.

The current means of processing this information is by calling 1-866-GOT-GAME (468-4263) or online at: <http://www3.dgif.virginia.gov/gamecheck> (accessed June 2012). Contact VDGIF as this information may change within the life of this document.

**(e) Why is the use being proposed?**

Hunting is one of the six priority public uses as defined by the National Wildlife Administration Act of 1966, as amended by the Refuge System Improvement Act of 1997. If compatible, hunting is to receive enhanced consideration over other general public uses in refuge planning and management.

Sport hunting is a tool managers use to maintain wildlife populations at an acceptable level. The VDGIF establishes hunting seasons and bag limits to meet population objectives and to offer people the opportunity to experience a traditional outdoor recreational activity. Game species population objectives are determined by a number of factors such as habitat limitations and landowner tolerances, and each year the seasons and bag limits are designed to remove the harvestable surplus without long-term negative impacts to the population. The ability to effectively manage game species populations depends in large part on the availability of land with quality habitat. Providing hunting opportunities on the refuge will aid the Commonwealth in meeting its management objectives and preserve a wildlife-dependent priority public use long associated with this land.

The Service intends to continue the tradition of wildlife-related recreation on the refuge by allowing hunting in compliance with State regulations. By allowing this use to continue, hunters can experience this traditional recreational activity, aid the refuge and State in maintaining acceptable game species population levels, gain a better appreciation of the refuge’s high quality wildlife habitats, and become better informed about the refuge and the Refuge System.

The Service encourages the development of hunting programs on national wildlife refuges when they are compatible with the refuge’s legal purposes, biologically sound, affordable, properly coordinated with other refuge programs, and meet the Service description of a quality hunt. “Quality hunts” are defined as those which are planned, supervised, conducted, and evaluated to promote positive hunting values and ethics such as fair chase and sportsmanship. The Service strives to provide hunting opportunities on refuges which are superior to those available on other public or private lands, and to provide participants with reasonable harvest opportunities, un-crowded conditions, fewer conflicts among hunters, relatively undisturbed wildlife, and limited interference from, or dependence on, mechanized aspects of the sport (605 FW 2).

The refuge was opened to public deer hunting in 1967 (32 FR 12444; codified at 50 CFR 32.31). A compatibility determination (1994) emphasizes that the objectives of the public deer hunting were to maintain the deer

population at a level commensurate with the biological carrying capacity (as defined in Smith 1980) of the available refuge habitat and to provide high quality wildlife-oriented recreation. Continuing to allowing this public use will also support visitor services goals developed for Presquile NWR’s Comprehensive Conservation Plan (CCP):

Wildlife-Dependent Recreation Goal: Provide wildlife-dependent recreational opportunities (interpretation, wildlife observation, nature photography, and hunting) for visitors to enjoy and connect with nature and develop an enhanced appreciation for and understanding of the refuge’s natural and cultural resources.

**AVAILABILITY OF RESOURCES:**

The financial and staff resources necessary to provide and administer these uses at their current levels are now available. We expect the existing financial resources to continue in the future, subject to availability of appropriated funds.

The Refuge Recreation Act requires that funds are available for the development, operation, and maintenance of the permitted forms of recreation. The preseason application fee and refuge hunting permit fee are the minimal amounts needed to offset the cost of facilitating the preseason drawings and manage the hunts. Due to the uncertainty in the level of hunter participation with these new program changes, permit fees may need to be adjusted (increased or decreased) and will be evaluated annually.

Current annual administrative costs associated with the existing refuge-supported operations for the deer hunt program are detailed in table B.2. Permit fees serve as cost recovery for administration of the public deer hunting program (table B.3).

**Table B.2. Current Annual Administrative Costs Associated with Public Deer Hunting.**

Activities	Resource	Annual Duration	Rate <sup>1</sup>	Cost
Program review, approves hunt conditions, submits updated CFR regulations	Deputy Refuge Manager (GS-12)	8 hours	\$42/ hour	\$336
Site preparation, scheduling, collaborates with VDGIF and contractor, responds to public inquiries, promotes use, administers and defines hunt conditions	Wildlife Refuge Specialist (GS-11)	40 hours	\$35/ hour	\$1400
Monitors harvest data, authors annual hunt plan, collaborates with VDGIF and contractor, defines hunt conditions, participates in deer health assessments	Wildlife Biologist (GS-11)	16 hours	\$35/ hour	\$560
Conducts patrols, coordinates with Federal and State conservation officers, defines hunt conditions	Federal Wildlife Officer (GL-09)	40 hours	\$39/ hour	\$1560
Support materials, mailings, and fuel				\$400
<b>TOTAL</b>				<b>\$4,256</b>

*Note: Some actions and resulting costs also support other approved public uses (i.e., wildlife observation, photography, environmental education, and interpretation).*

<sup>1</sup> In 2012 dollars, full performance salary at GS-Step 6 or GL-Step 6.

**Table B.3. Annual Costs Recovered from Allowing Public Deer Hunting.**

Service Provided	Provider	Cost per Unit	Units	Annual Costs Recovered
Application Fee	DGIF contractor	\$7.50 / application	85 / year (on average)	\$637.50
Refuge Hunt Permit Fee	Refuge (80%)	\$10.00 / permit issued	<120 / year	<\$1200
	Region (20%)			
<b>TOTAL</b>				<b>\$5,456</b>

**ANTICIPATED IMPACTS OF THE USE:**

Hunting can result in positive or negative impacts to the wildlife resource. A positive effect of allowing visitors’ access to the refuge will be the provision of additional wildlife-dependent recreational opportunities and a better appreciation and more complete understanding of the wildlife and habitats associated with Delmarva ecosystems. This can translate into more widespread and stronger support for the refuge, the Refuge System, and the Service. The following is a discussion of refuge-specific impacts, which are supported by a compilation of baseline information relative to the featured topic.

**General Impacts of Public Use**

Direct impacts are those impacts immediately attributable to an action. Indirect impacts are those impacts that are farther in time and in space. Effects that are minor when considered alone, but collectively may be important are known as cumulative effects. Incremental increases in activities by people engaged in the variety of allowed uses on the refuge could cause cumulative impacts. It will be important for refuge staff to monitor these activities to ensure wildlife resources are not impacted in a detrimental manner.

**Soils and Vegetation Impacts**

Repeated visitation to any particular locale at the refuge would continue to cause minor site-specific damage to vegetation. Repeated use of an aquatic area by boats equipped with go-devils can damage to emergent and submergent vegetation beds. Portions of or whole plants can be torn, sometimes by roots, and boat wakes contribute to erosion. Accidental introduction of invasive plants, pathogens, or exotic invertebrates attached to boats or trailers, or on shoes or clothing, is another source of direct minor impacts on vegetation. In places where unmarked paths are created by hunters and anglers, little used pathways will retain their dominant vegetation species, but on medium-use pathways some plant species will be replaced and heavily-used paths will often contain invasive species (Liddle and Scorgie 1980).

Using staff observations of past impacts, hunting is expected to have negligible adverse impacts on soils and vegetation in the short and long-term. Disturbance to soils and vegetation may occur when hunters travel off-trail through upland and wetland habitats. Since all soils at Presquile NWR have a severe rating for rutting hazard (USDA 2010), possibility for new trails to be developed from repeated hunter entry may occur in the long term. However, given the large expanse of both upland and wetland acreage open to hunting and the limited number of hunt days offered on the refuge, we expect negligible impacts to soils and vegetation would result because the hunters disperse themselves across hunting areas, hunters typically only travel as far as needed to find a desirable hunting location, and most vegetative species will have already undergone senescence or become dormant.

The physical effects on vegetation from hunting various refuge deer in the fall are expected to be minimal. Positive, indirect effects on the vegetation would result from a reduction in the white-tailed deer population. The impacts of dense deer populations on forest regeneration and the composition and diversity of the herbaceous understory have been well documented (Tierson et al. 1966, Behrend et al. 1970, Tilghman 1989). Allowing public deer hunting on the refuge would maintain the habitat as it is now and prevent degradation due to overbrowsing. Well-managed hunting can effectively control deer and produce dramatic changes in the forest vegetation (Behrend et al. 1970). The impact of deer hunting on the vegetation would be positive and result in better regeneration of forest canopy species and an increase in the diversity of the herbaceous understory. In summary, there would be few if any negative impacts from this use on the refuge’s vegetation, but there would be beneficial impacts from the decrease of deer browse on the refuge’s vegetation due to the decrease in the number of deer on refuge lands.

Possible negative cumulative impacts of the proposed activity include temporary trampling of vegetation and soil rutting. Since hunters are not restricted to utilizing only trails designed for other public use activities, they may impact vegetation and soils off-trails. However, these effects are expected to be minimal because hunters are generally dispersed on each of the hunt days. Few scouting and hunting days are offered each year. Also, hunters are required to travel on-foot. Areas open to public deer hunting would be monitored for impacts to vegetation and soils and, if impacts are noticed, designated areas would be temporarily closed for restoration.

The short-term impacts of trampling vegetation include damage and killing of individual plants, whereas long-term impacts include soil compaction (Kuss 1986). However, due to the limited number of hunters and hunt dates, minimized off-trail travel, and the dispersed nature of the hunt, we predict that these impacts will be minor. White-tailed deer foraging can also have negative impacts on native vegetation, including reduced forest regeneration and changes in plant composition and structure (Augustine and Jordon 1998).

## **Wildlife Impacts**

### *White-tailed Deer*

Virginia's prehunt deer population is estimated to be between 850,000 and 1,000,000 deer, and is not at risk (VDGIF 2007). The State determines seasons, bag limits, and number of permits based on regional deer harvest data. Annually since 2001, deer harvests have increased from Chesterfield County, Charles City County, and Henrico Counties (41 percent, 26 percent, and 34 percent, respectively), indicating growing deer populations in the refuge vicinity.

By law, each successful deer hunter is required to check every deer killed. Information regarding the animal's sex, date of kill, weapon, and county of kill is recorded at check stations or contacting the VDGIF office. Results of the annual deer kill represent an actual known minimum count. However, since the refuge does not operate a check station and hunters only report the county in which a deer was harvested, the actual number of deer harvested by hunters on the refuge is not known. The best available information about hunter participation and deer harvest success rates is from refuge staff (Cyrus Brame, personal communication). Between 2007 and 2011, an average of only 92 visitors participated in the annual public deer hunt. Refuge staff approximate that only 10 percent of hunters on the refuge successfully harvest a deer. These data suggest that likely no more than 20 deer have been harvested annually between 2007 and 2011. Even if every potential hunting permit was issued, each permitted hunter showed up on the refuge to hunt, and each hunter was successful in harvesting two deer per day, this would mean that a maximum deer harvest would be 240 deer. A harvest of 240 deer would have accounted for only 12 percent of the deer reported harvested from Chesterfield County in 2011 (<http://www.dgif.virginia.gov/wildlife/deer/harvest/index.asp>; accessed June 2012).

The Commonwealth's deer management program regulates deer hunting toward maintaining at moderate to low population densities, in fair to good physical condition, and below the biological carrying capacity of the habitat (VDGIF 2007). Through partnership with the VDGIF, a health assessment of deer collected on the refuge was conducted in September 2004. The results of the health assessment of the local deer population indicate that the deer population in the vicinity is higher than optimal for Presquile NWR (Moyer 2004). We did temporarily operate a deer check station on the refuge during the 2005 and 2006 hunt, and the data collected indicated that the deer population seemed to be healthy (VDGIF 2005).

Therefore, the deer hunt program at Presquile NWR has a minor, beneficial impact of deer hunting on the white-tailed deer populations in Chesterfield County.

### *Other Resident Wildlife*

The use does have some disturbance to other native wildlife present on the refuge. However, the timing of the hunt is such that many native wildlife species are either away or dormant at the time of the hunt and, therefore, unlikely to be affected. White-tailed deer hunting is the single most important public use on the refuge that would impact mammals, including deer and other forest-dependent wildlife. Impacts on amphibians and reptiles are expected to be negligible because these species are preparing or already hibernating or in torpor during the hunt days on the refuge (typically occurring mid-November through mid-December). Impacts to invertebrates such as butterflies, moths, other insects, and spiders are expected to be negligible. Invertebrates are not active during the majority of the hunting seasons and would have few interactions with hunters during the hunting season.

Managing the deer population at a level that refuge habitat can support prevents direct negative impacts to other wildlife and habitat present. For example, heavily browsed habitats (a result of insufficient food for the herd size) have shown to decrease migratory song bird foraging opportunity (deCalesta 1994).

### *Migratory Birds*

Fall is the season for bird migration, and hunting may disturb their resting and foraging during this critical time. The impacts from hunting are not known, but related to the frequency, type, and duration of the disturbance. Migrating and wintering birds may be foraging and roosting in upland and wetland habitats. Hunting activity may cause these birds to unnecessarily take flight, expending energy resources when food resources are limited. Since this use is not concentrated in space or time (it occurs on select days throughout the refuge during designated times within the hunting season), the disturbance effects on wildlife that are using the refuge during fall and winter are not expected to be significant.

Access to interior creeks may result in flushing of waterfowl and waterbirds. However, limited boat accessibility due to the tidal fluctuations of the creeks and wide distribution of a relatively small amount of hunters, many of the tributaries and western-most locations within the creeks will be undisturbed. Additionally, waterfowl and waterbirds often move out of the creeks during daylight hours to forage and loaf in and along the main stem of the James River. Other types of migratory birds, namely neotropical migrant species, have already departed the refuge for wintering grounds further south.

The ingestion of lead shot by birds, especially waterfowl, is a concern. However, the impacts are lessened on refuge lands due to regulations encouraging the use of lead-free shot for deer hunting on the refuge.

### *Species of Special Status*

Anticipated direct, indirect, and cumulative impacts to endangered species, threatened species, and other special status species of the refuge are described below. The refuge requested Section 7 informal consultation with the Service's Virginia Field Office under the Endangered Species Act (16 U.S.C. 1536) on all the actions in alternative B of the draft CCP/environmental assessment (EA) for Presquile NWR, including hunting, that could potentially impact listed species. This process resulted in a finding that our proposed actions are not likely to adversely affect the listed species or their associated habitats on the refuge. The full Intra-Service Section 7 Biological Evaluation form can be found in appendix E of the draft CCP/EA. Other, non-game special status species are not expected to be impacted by public deer hunting at Presquile NWR.

Bald eagles (*Haliaeetus leucocephalus*) are known to nest, roost, and winter at Presquile NWR. We abide by the Joint Service-State Bald Eagle Protection Guidelines for Virginia (VDGIF 2008), observing the time of year restrictions when determining appropriate hunt dates. Therefore, deer hunting is not permitted in the vicinity of eagle nests after December 15.

Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) are known to occur in the James River, near Presquile NWR. The Chesapeake Bay population of this species was recently listed as federally endangered. Sturgeon migrate to the Atlantic Ocean in late summer, so they would not be present in the waters around Presquile NWR when deer hunters access the refuge by boat.

Sensitive joint-vetch (*Aeschynomene virginica*) plants are known to occur in tidal freshwater marshes at Presquile NWR. Since this habitat is unsuitable for deer and inaccessible by hunters, no impacts to sensitive joint-vetch would result from public deer hunting at the refuge.

### **Impacts on Public Use and Access**

Refuge lands have become increasingly important in the region as a place to engage in this activity. Hunters have the opportunity to harvest a renewable resource in a traditional manner, which is culturally important to the local community. Refuge lands allow the public to enjoy hunting at no or little cost in a region where private land is leased for hunting, often costing a person several hundred to several thousand dollars per year for membership. Refuge hunting programs provide opportunities to experience a wildlife-dependent recreational activity, instill an appreciation for and understanding of wildlife, the natural world and the environment, and promote a land ethic and environmental awareness. The minor beneficial impacts of providing the existing level of wildlife-dependent activities include helping meet existing and future demands for outdoor recreation and education.

The refuge would also be promoting a wildlife-oriented recreational opportunity that is compatible with the purpose for which the refuge was established. The public would have an increased awareness of the refuge and the Refuge System and public demand for more areas to hunt and learn about wildlife would be met. Over time, it is reasonable to believe that public awareness of the refuge would increase, and, in turn, visitation would increase on the areas open to hunting. We anticipate that the refuge would continue to meeting the demand as it increases in the long term.

On hunt days, the refuge will be closed to other public uses (i.e., wildlife observation, nature photography, environmental education, interpretation, and research by non-Service personnel). The limited number of public deer hunting days allows us to avoid potential for conflicts among appropriate and compatible public uses of the refuge. We anticipate a negligible impact on other public uses of the refuge.

**PUBLIC REVIEW AND COMMENT:**

As part of the comprehensive conservation planning process for Presquile NWR, this compatibility determination underwent extensive public review, including a comment period of 37 days following the release of the draft comprehensive conservation plan and environmental assessment.

**DETERMINATION (CHECK ONE BELOW):**

- Use is not compatible
- Use is compatible, with the following stipulations

**STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

- The following stipulations will help ensure the refuge white-tailed deer hunting program is compatible with refuge purposes.
- Hunters must abide by all applicable Federal, State, and refuge-specific regulations. Refuge-specific regulations are published annually in the Federal Register, Title 50 of the Code of Federal Regulations, and on a form that hunters must sign to be issued a hunt permit (see attachment 1).
- Hunters meet all State hunting license and refuge hunt permitting requirements to participate in the refuge's deer hunt.
- Each hunter shall comply with the terms and conditions under which hunting permits are issued. This includes, but is not limited to, big game harvest reporting.
- Hunters must access the refuge only via designated docking location.
- Hunters are encouraged to use lead-free ammunition.
- Refuge staff will help ensure compliance of hunt regulations and protect refuge resources.
- Refuge staff shall adhere to the Joint Service-State Bald Eagle Protection Guidelines of Virginia when planning upcoming public deer hunts and administering the hunt.

**JUSTIFICATION:**

Hunting is a priority public use and is to receive enhanced consideration on refuges, according to the Refuge System Improvement Act. Providing increased wildlife-dependent recreational opportunities at Presquile NWR promotes visitor appreciation and support for the refuge, Refuge System, and Service; engages communities in local habitat conservation efforts in the lower James River and the Chesapeake Bay; and instills a sense of ownership and stewardship ethic in refuge visitors.

Hunting, as described above, will not detract from the purpose and intent of the refuge. Stipulations described will ensure proper control over the use and provide management flexibility should detrimental impact develop. Allowing this use furthers the mission of the Refuge System and Service by expanding opportunities for wildlife dependent uses when compatible and consistent with sound fish and wildlife management. We have determined that hunting will not materially interfere with, or detract from, the fulfillment of the Refuge System mission or the purposes for which the refuge was established.

**SIGNATURE:** Refuge Manager:  10/3/12  
(Signature and Date)

**CONCURRENCE:** Regional Chief:  10/5/2012  
(Signature and Date)

**MANDATORY 15 YEAR RE-EVALUATION DATE:** 10/5/2027

**LITERATURE CITED:**

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Figure B.1. Location and relation of Presquile National Wildlife Refuge to conservation lands in the vicinity

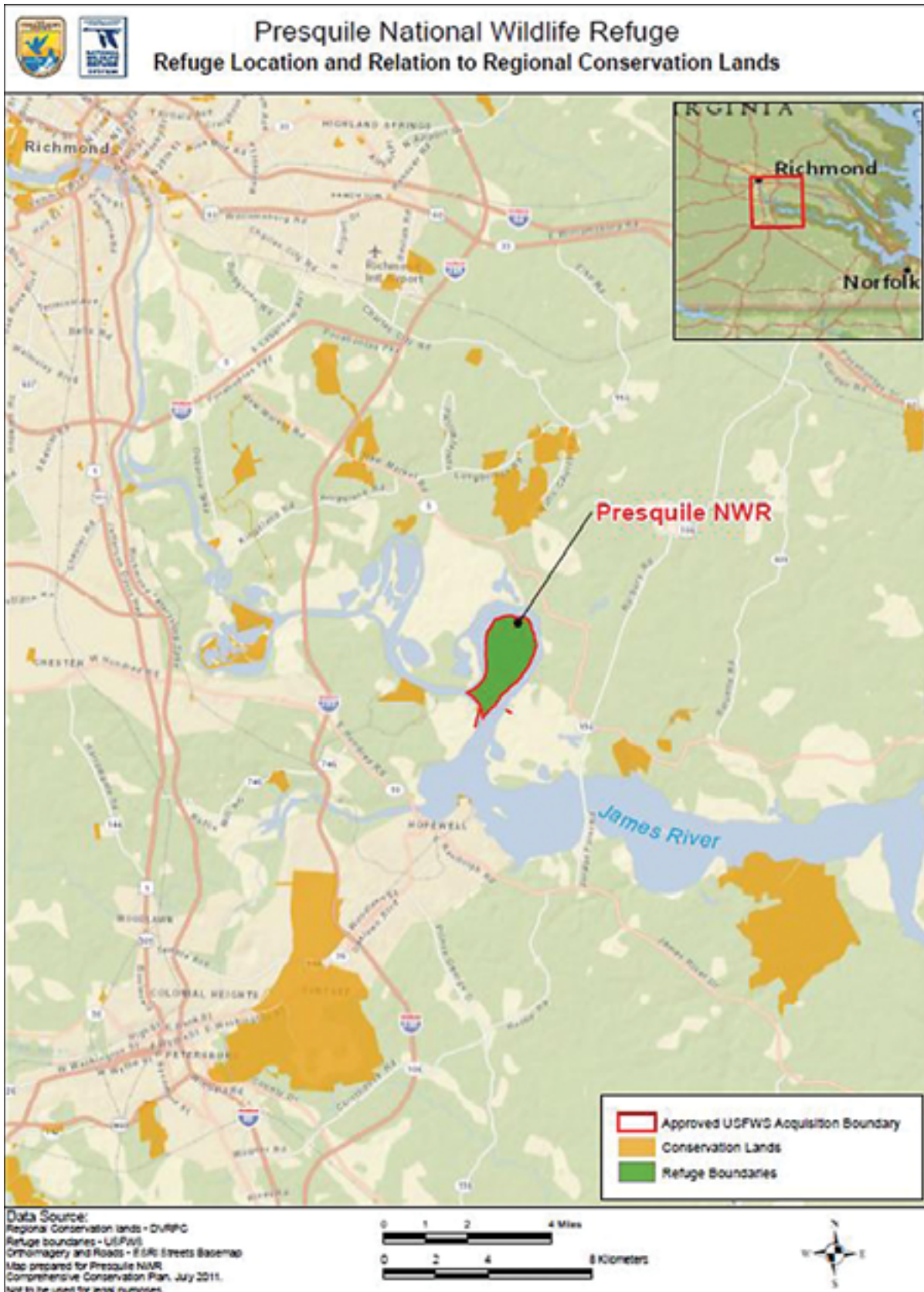
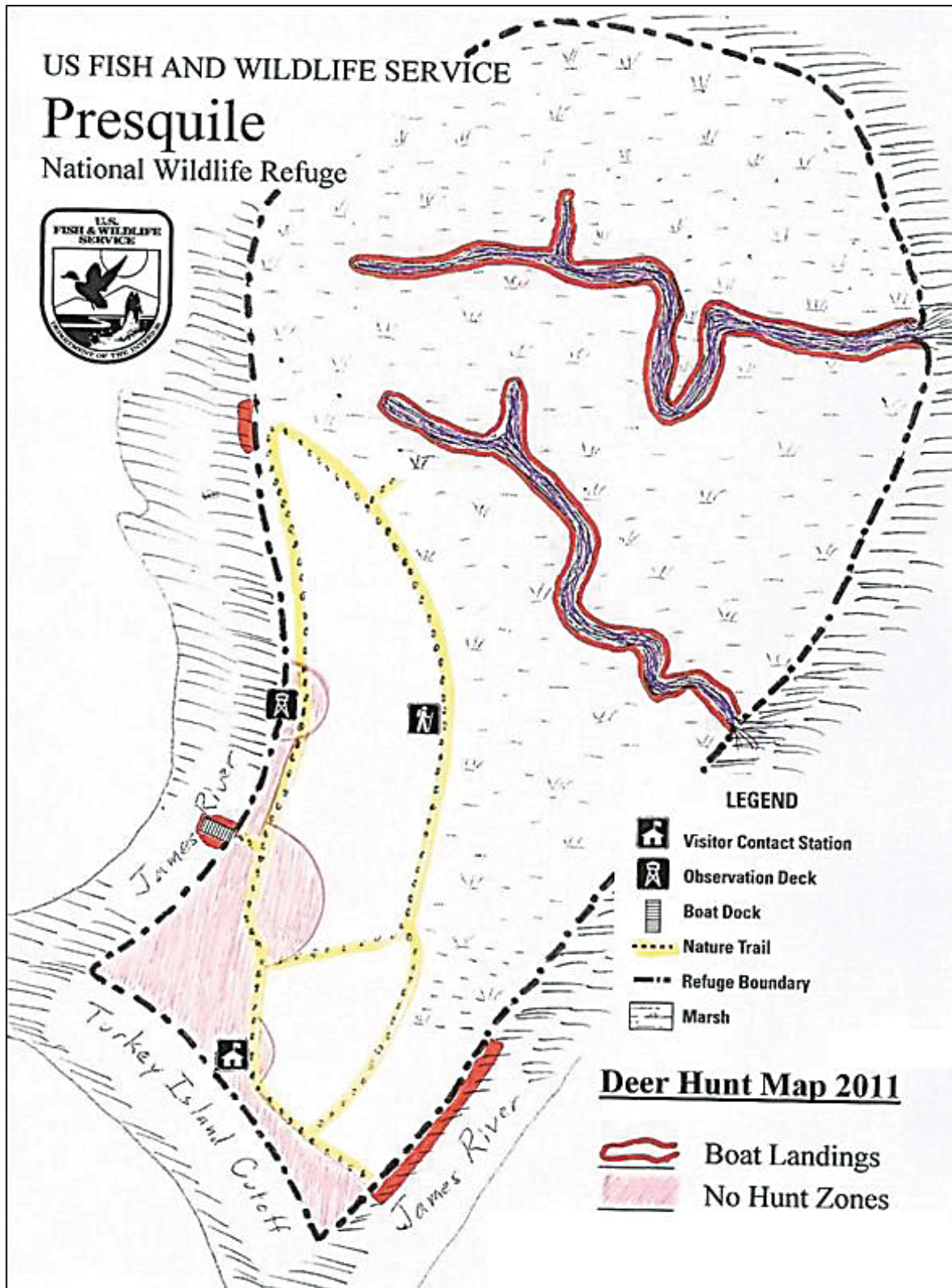


Figure B.2. Deer hunt map (2011) for Presquile National Wildlife Refuge, showing designated boat landing areas and “no hunt zones”



Attachment 1. 2010 Refuge-specific Deer Hunting Permit Conditions for Presquile NWR

Presquile National Wildlife Refuge  
2010 Refuge-Specific Hunting Permit Conditions

In addition to current Code of Virginia Big Game Hunting Regulations and Title 50 Code of Federal Regulations, hunting of white-tailed deer in designated areas of the Refuge is subject to the following permit conditions. **APPLICANTS MUST SIGN BELOW AND RETURN WITH PERMIT FEE. NO PERMIT WILL BE ISSUED UNLESS A SIGNED COPY IS RECEIVED BY THE REFUGE OFFICE.** Any violation of the permit conditions may result in loss of hunting privileges. No refunds will be given.

1. We require big game hunters to obtain a permit by way of quota hunt application and subsequent lottery. We require a fee to obtain a refuge hunting permit. We notify successful applicants by mail or e-mail, and if we receive the hunting fee by the date identified in the mailing, we mail refuge hunting permits to successful applicants.
2. We require hunters to possess a refuge hunting permit, along with their State hunting license and stamps, while on refuge property.
3. We require still hunting only. We prohibit the use of "man drives", defined as individual or group efforts intended to "push" or "jump" deer for the purposes of hunting.
4. We allow the use of shotguns (20 gauge or larger, loaded with buckshot and or rifled slugs). We require hunters using slugs to be in a stand elevated 10 feet or more above the ground.
5. We permit the take of two deer of either sex per day.
6. We prohibit dogs.
7. We prohibit the discharge of a weapon within 300 feet of any building.
8. We allow only portable tree stands that hunters must remove at the end of each hunt day. We prohibit damage to trees.
9. We require hunters to wear in a conspicuous manner on head, chest, and back a minimum of 400 square inches of solid-colored, hunter-orange clothing or material.
10. We prohibit the use of flagging to mark trails or for any other purpose.
11. Persons possessing, transporting, or carrying firearms on National Wildlife Refuges must comply with all provisions of state and local law. Persons may only use (discharge) firearms in accordance with refuge regulation (see 27.42 of this chapter).
12. We require youth hunters aged 12 to 17 to be accompanied by and under the direct control of an adult, aged 21 or older, who must also possess and carry a valid hunting license and Refuge Hunting Permit. We do not permit persons under the age of 12 to hunt on the refuge.
13. We prohibit the use or possession of alcohol while hunting on the refuge.
14. We require hunters to dock their boats at designated locations on the refuge.
15. We require hunters to report accidents or injuries to the refuge office or sheriff's office no more than 24 hours after the incident. Hunting accidents resulting in serious injury must be reported to the sheriff's office immediately.

**I confirm that I understand and will comply with the conditions stated above.**

<i>Name (Please Print)</i>	<i>Signature</i>	<i>Date</i>
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<i>* Parent/Legal Guardian Name (Print)</i>	<i>Parent/Legal Guardian Signature</i>	<i>Date</i>
---------------------------------------------	----------------------------------------	-------------

\* NOTE: Both hunter and Parent/Legal Guardian must sign if hunter is a youth under the age of 18.

## COMPATIBILITY DETERMINATION

### **USE:**

Wildlife Observation, Photography, Environmental Education, and Interpretation

### **REFUGE NAME:**

Presquile National Wildlife Refuge

### **ESTABLISHING AND ACQUISITION AUTHORITY(IES):**

Presquile National Wildlife Refuge (NWR) was established on March 7, 1953, under the Migratory Bird Conservation Act (MBCA) (16 U.S.C. 715d) of February 18, 1929 (45 Stat. 1222) authority to (2) “acquire, by gift or devise, any area or interests therein” that the Secretary of the Interior “determines to be suitable for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” The tract was gifted from A.D. Williams for use as a wildlife refuge in 1952.

### **REFUGE PURPOSE(S):**

In accordance with the MBCA, the purpose of Presquile NWR is “...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.”

### **NATIONAL WILDLIFE REFUGE SYSTEM MISSION:**

The mission of the National Wildlife Refuge System (NWRS) is “to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966 [16 U.S.C. 668dd-668ee], as amended by the National Wildlife Refuge System Improvement Act of 1997 [NWRISA][Public Law 105-57]).

### **DESCRIPTION OF USE:**

#### **(a) What is the use? Is the use a priority public use?**

The uses are wildlife observation, photography, environmental education, and interpretation. The NWRISA identified these uses as four of the six, priority, wildlife-dependent recreational uses to be facilitated in the NWRS.

#### **(b) Where would the use be conducted?**

These four public uses will be concentrated on approximately 17 acres (hereafter referred to as the “public use area”) of the 1,329-acre island refuge (Figure B.3). A 3.5-mile trail network (mowed path, gravel corridor, and boardwalk) occupies 7 acres, and high foot traffic areas adjacent to structures occupy 10 acres of upland lawn (Figure B.4). Overnight accommodations are located within the public use area and, more specifically, within a 200-yard radius of the existing environmental education center (Figure B.4).

#### **(c) When would the use be conducted?**

These four public uses may occur when there are no time-of-year restrictions. Time-of-year restrictions ensure compliance with purposes for which the refuge was established; and specifically, to protect threatened or endangered species and species of concern, and to prevent conflicts with other refuge public uses (i.e., public deer hunt) or management activities (e.g., prescribed burn). Partner-sponsored environmental education

will occur as outlined in an annual environmental education plan, which is approved by the Refuge Manager. Environmental education programming includes single-day and multi-day/overnight visits. Other events will be scheduled on a case-by-case basis.

**(d) How would the use be conducted?**

These four public uses will be conducted by individuals or groups, participating in self-guided or group activities. Visitation to Presquile NWR is authorized either through participation in a refuge-sponsored program or by obtaining an approved General Special Use Permit (General SUP).

Refuge-sponsored programs are advertised in local publications and on the refuge website (<http://www.fws.gov/northeast/presquile>). Participation instructions are included in these announcements. Individuals do not need to acquire a General SUP to participate in refuge-sponsored programs.

A General SUP may be issued to an individual; a group (e.g., birding club, Virginia Master Naturalists); or formally-recognized U.S. Fish and Wildlife Service (FWS) partner organization or agency (e.g., Richmond Audubon Society, James River Association [JRA], National Park Service [NPS]) sponsoring a wildlife-dependent recreational use program. Program sponsors request a General SUP on behalf of program participants; individuals participating in partner-sponsored programs do not need to acquire their own General SUPs. For example, the JRA is a formally-recognized FWS partner organization that has been granted a General SUP to conduct an environmental education program for student groups at Presquile NWR on a recurring basis. The General SUP application will be mailed, emailed, or faxed to the applicant upon request. The Refuge Manager, or his designee, will evaluate the General SUP application and determine if a permit will be issued. The applicant will be sent an approved General SUP and informed that the applicant must have a copy of the permit in his/her possession while visiting the refuge. If a permit application is denied, the applicant will be informed of the basis for permit denial.

The refuge is accessible by watercraft (e.g., kayak, canoe, boat, jet boats). Permit applicants are informed that a limited number of watercraft can be accommodated by the refuge's small dock (30-ft long by 10-ft wide; Figure B.4) and that the quality of the outdoor experience is improved when groups are kept to fewer than 35 individuals. Refuge use and trail information is provided to visitors in advance of their visit. Refuge staff and partners communicate directly with visitors, referring them to the trail flyer on the refuge website and to the terms and conditions detailed in their General SUP.

### **Access to the Refuge**

Refuge or partner-sponsored programs access the refuge in accordance with terms and conditions of access easements on adjacent private property.

When not participating in refuge- or partner-sponsored events, permitted refuge visitors access the island by launching from a public launch site in the vicinity or from an area of their choosing for which they have approval, using privately-owned watercraft. Watercraft tie up at the refuge's existing floating dock, which is located on the southwestern side of the island (Figure B.4). A limited number of visitors may be authorized to access the refuge via the small kayak launch on an unnamed tidal creek and associated boardwalk (Figure B.4). These are the only two locations where unchaperoned (unaccompanied by a FWS employee or representative) refuge access is authorized for wildlife observation, photography, environmental education, and interpretation.

### **Access on the Refuge**

Once ashore, visitors walk on the dock, boardwalk, or maintained lawn and proceed to hike along trails, staying within the 17-acre public use area. Off-trail use is acceptable only when participating in specific, refuge-authorized activities (e.g., tree planting, invasive species control).

### **Future Infrastructure and Programming Enhancements**

Future infrastructure and programming enhancements may be implemented in accordance with an approved Comprehensive Conservation Plan (CCP; currently in development) and Visitor Services step-down plan (to be completed within 3 years of an approved CCP) for Presquile NWR, as funding and staff become available. In the interim, a FWS Visitor Services Review (USFWS 2010) recommended that the refuge proceed with its environmental education partnership with the JRA and expand opportunities for wildlife observation, photography, environmental education, and interpretation. Potential enhancements may include: installation

of a permanent viewing scope at the observation platform; development and installation of interpretive panels regarding cultural and natural history of the site; and development of goals and objectives for the environmental education program in partnership with appropriate partners (e.g., JRA) which incorporate FWS messages, such as the mission of the FWS and Leave No Trace.

### **The James River Ecology School**

The bulk of visitors, students, and youth groups using Presquile NWR for environmental education will be participants of the James River Ecology School (the Ecology School). In December 2007 FWS signed a 20-year Memorandum of Understanding (MOU) with the JRA to develop the Ecology School. The Ecology School programming is designed to provide meaningful outdoor experiences that connect people with nature, is focused on the Chesapeake Bay and James River watershed, and is consistent with Virginia Standards of Learning requirements.

In accordance with the MOU, JRA will recruit participants and coordinate the administration of the Ecology School with general oversight by the FWS. The FWS and JRA will cooperatively develop an annual environmental education plan that lists the dates and outlines participant activities. Overnight accommodations (i.e., tent camping or indoor lodging) on the refuge will continue to be permitted for the Ecology School upon approval of an environmental education plan and human health and safety plan. On-site group leaders will ensure adherence to safety policies for each visiting group.

### **FWS and NPS Collaboration in the Chesapeake Bay Watershed**

In October 2010, the FWS and NPS signed a MOU regarding cooperation and collaboration on a variety of efforts within the Chesapeake Bay Watershed. Among these efforts is implementation of the Captain John Smith Chesapeake National Historic Trail (CAJO), America's first water-based national historic trail. The 3,000 mile water trail follows the routes of Captain John Smith's exploration of the Chesapeake Bay and its tributaries in 1607-1609. Through recreational experiences on water and land, knowledge about American Indian societies and cultures of the 17th century is shared and the natural history of the Chesapeake Bay and tributaries are interpreted.

During 2011, the FWS actively participated in the planning process for implementing the Captain John Smith Chesapeake NHT on the James River. Presquile NWR has been identified as a key site for interpretation and education. Through continued collaboration, the FWS and NPS will ensure that Captain John Smith Chesapeake NHT-related activities proposed to occur at Presquile NWR are implemented in a manner that is compatible with the purpose and intent of the refuge.

#### **(e) Why is the use being proposed?**

The NWRSIA identifies these four uses as priority public uses that, if compatible, are to receive enhanced consideration over other general public uses. These four uses have been allowed since Presquile NWR was established in 1953 without unacceptable impacts to the refuge. Continuing these compatible priority public uses at Presquile NWR will facilitate public enjoyment of and advocacy for the refuge, the NWRS, and the FWS mission.

Partner-sponsored programs will clearly convey key FWS messages about conservation. Ecology School programs will include opportunities to conduct hands-on habitat improvement projects and various other activities on Presquile NWR to instill an 'ownership' or 'stewardship' ethic in program participants.

Allowing these four public uses will also support visitor services goals developed for Presquile NWR's CCP:

*Environmental Education Goal: Immerse visitors in environmental education experiences to inspire appreciation and stewardship of our natural and cultural resources, expand understanding of the significance of the James River to the Chesapeake Bay, and raise awareness of the National Wildlife Refuge System.*

*Interpretation and Wildlife-Dependent Recreation Goal: Provide opportunities for visitors to connect with nature and enhance their appreciation, understanding, and enjoyment of the Refuge's natural and cultural resources through a variety of quality, wildlife-dependent public uses, including interpretation, wildlife observation, nature photography, and hunting.*

## **AVAILABILITY OF RESOURCES:**

The financial and staff resources necessary to provide and administer these uses at their current levels are now available. We expect the existing financial resources to continue in the future, subject to availability of appropriated funds. Recommendations detailed in the CCP and Visitor Services step-down plan would identify strategies for implementation. Current annual administrative costs associated with the existing refuge-supported operations for wildlife observation, photography, environmental education, and interpretation programming are detailed in Table B.4.

There will be an initial one-time cost to establish the baseline monitoring that can be funded through either refuge budget or special project monies, depending on the anticipated amount.

## **ANTICIPATED IMPACTS OF THE USE:**

### **Background**

Currently, Presquile NWR operates their biological and visitor services programs under interim goals and objectives derived from the language in the 1953 refuge establishment purposes, the NWRSA, and the refuge's Biological Profile of 2002. Until the refuge's CCP is completed, these interim goals and objectives provide the context for making management decisions affecting both the biological and visitor services programs. Reevaluation of goals and objectives is one of the early steps in the development of a refuge CCP. Presquile NWR embarked on its CCP development process in January 2011. Once the CCP is approved, this compatibility determination will be revised, updated, or amended, as warranted, to be consistent with the decisions made in that plan.

Specific refuge objectives stated in the Biological Profile of 2002:

- To improve and maintain swamp, marsh habitats capable of supporting waterfowl populations at objective levels;
- To provide habitat sufficient to maintain a wintering flock of Canada geese at objective levels;
- To manage refuge habitat sufficient to provide for optimum numbers of resident wildlife species; and
- To provide an opportunity to view wildlife in its natural environment.

Quantitative population objective levels for geese and ducks were never set for two reasons. First, information on refuge responsibility within the landscape for wintering waterfowl populations was lacking. Second, a CCP for Presquile NWR was anticipated to be completed in the short-term future.

New information about the refuge's contributions toward populations of several bird species of conservation concern has been acquired since 2002 and has influenced implementation of the public use program. During the Lower James River Important Bird Area designation process, we learned that Presquile NWR contributes significantly to several bird species of conservation concern, including breeding prothonotary warblers, nesting and roosting bald eagles (listed as state threatened), roosting purple martins, wintering rusty blackbirds, breeding black ducks, ground nesting American woodcock, wild turkey, and northern bobwhite quail (National Audubon Society 2007). Bald eagle nest productivity flights conducted by the Center for Conservation Biology (CCB) revealed a high concentration of wintering and nesting bald eagles in the area (Watts and Byrd 2010).

Additionally, the public use program on the refuge is affected by FWS policy to ensure that the biological integrity, diversity, and environmental health (BIDEH) of the NWRS are maintained for the benefit of present and future generations of Americans. The FWS policy on BIDEH (601 FW 3) provides for the consideration and protection of the broad spectrum of fish, wildlife, and habitat resources found on national wildlife refuges and associated ecosystems. As a result, the CCP may also include new objectives to protect non-avian wildlife and their habitats, including state listed reptiles (e.g., spotted turtle, box turtle, and hog-nosed snake), amphibians, and pollinators. All refuge-specific goals, objectives, and strategies will be developed within the context



of the refuge's establishing purpose, anticipated effects of climate change, and using the strategic habitat conservation approach.

In an effort to consider and protect the broad spectrum of fish, wildlife, and habitats present at Presquile NWR, adverse impacts to the refuge's BIDEH will be avoided or minimized when implementing public use programs by establishing stipulations that control the use context, intensity, and duration.

### **Soils, Vegetation, and Wildlife**

Refuge visitors will be concentrated in the 17-acre public use area (i.e., trail network and lawn areas adjacent to buildings). As a result of their activities, visitors are likely to generate noise, trample vegetation, and occupy buildings with windows and lighting. Wildlife and habitat in the vicinity may be impacted.

Visitor use in the uplands occurs in areas dominated by hardy fescue, which is able to withstand high foot-traffic. The existing dock and boardwalks serve to connect the waterways to the uplands and avoid visitor-caused impacts to sensitive areas and resources.

Increased foot traffic and construction equipment are the primary sources for introduction of non-native, invasive plant species. Increased visitation is the primary factor for site damage and deterioration at many campsites, primarily through trampling of vegetation (Kuss and Hall 1991) and loss of organic soil (Cole and Marion 1988). Some salamander species will not cross openings that are too wide, dry, graveled, or bare ground (Marsh et al. 2005, Vinson 1998).

Noise and motion near nesting or roosting sites may cause wildlife to flush and expend energy otherwise needed for reproductive success or overwintering survival (Burger 1981, Klein 1989). External lighting fixtures and light from internal sources can disorient birds and amphibians and fatally attract pollinators (Brown et al. 2007; Buchanan 2002; Frank 1988, 2002). Large glass windows that reflect habitat or look deceptively like open sky kill millions of birds each year in the United States, especially during night migration and near stopover sites (Brown et al. 2007).

The FWS abides by the joint Service-State Bald Eagle Protection Guidelines for Virginia (VDGIF 2008). These guidelines include time of year restrictions and distance setbacks from nests and concentration areas. At Presquile NWR, the public use area is located beyond the 660-ft maximum buffer requirement for active bald eagle nests. No impacts to Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), a National Marine Fisheries Service Species of Concern, or the federally threatened sensitive joint-vetch (*Aeschynomene virginica*) will result from wildlife observation, photography, environmental education, and interpretation on the refuge.

### **Public Access and Use**

Refuge visitation has been affected by reductions in refuge staff, budget, and transportation capabilities. During the 1980s, three full-time employees and one part-time employee administered activities and facilitated visits by ferrying approximately 2,600 people to the refuge annually. In recent years, only one full-time employee has been administering activities and facilitating visits to Presquile NWR, as well as at James River NWR and Plum Tree Island NWR. In 2001, the U.S. Coast Guard deemed the ferry unsafe for continued transportation of the public to Presquile NWR. Currently, refuge- and partner-sponsored programs are facilitated through the use of single and multi-passenger watercraft.

Visitation has declined to 400 people annually. Visitation is planned to increase gradually to nearly the historic level, while avoiding unacceptable impacts to resources. Current and predicted visitation limits are detailed in Table B.5.

Ideally, expanded wildlife observation, photography, environmental education, and interpretation activities conducted on Presquile NWR would positively contribute to appreciation and protection of migratory birds and their habitats, both on and off the refuge. There may be short-term disturbance to common plants and wildlife during some refuge-authorized, off-trail activities, but this will be monitored by staff and partners to ensure the effort does not result in long-term disturbance.

The monitoring of natural resource impacts associated with visitor use patterns will be conducted by staff, volunteers, or contractors on an annual and seasonal basis. Currently, infrastructure improvements at the refuge are being supervised by the Outdoor Recreation Planner. These infrastructure improvements will be completed prior to commencing the Ecology School. The Outdoor Recreation Planner's time will then be reallocated to developing, coordinating, and implementing a visitor impact monitoring program.

Data and information generated by on-going biological surveys (i.e., eagle surveys conducted by CCB at the College of William and Mary; prothonotary warbler research conducted by Virginia Commonwealth University; and herpetological assessments conducted by Virginia Herpetology Society) will be considered in the development of a visitor impact monitoring program. Examples of new information about impacts related to trail and building use that may be desirable to monitor include: wildlife basking or nesting in the field margins (e.g., quail, woodcock, box turtle); encroachment of native plant communities by invasive plant species; bird collisions with windows; and behavior and mortality of night-flying pollinators.

Protocols and thresholds for visitor impact monitoring (such as in Goff et al. 1988) will be developed by a monitoring team.

### **PUBLIC REVIEW AND COMMENT:**

A news release announcing the availability of the draft compatibility determination (CD) for a 15-day public review and comment period was issued the following media outlets on September 12, 2011: Chesterfield Observer and Richmond Times Dispatch. A copy of the draft CD was made available for public review and comment at these locations:

Refuge Complex Headquarters: 336 Wilna Road, Warsaw, Virginia 22572  
Refuge Charles City Sub-office: 11116 Kimages Road, Charles City, Virginia 23030  
Hopewell Regional Library: 245 East Cawson Street, Hopewell, Virginia 23860  
Chester Library: 11800 Centre Street, Chester, Virginia 23831-1781  
Internet: <http://www.fws.gov/northeast/presquile>

The draft CD was distributed to representatives of the Richmond Audubon Society, James River Association, Virginia Council of Indians, and NPS. During the public comment period, we received two letters in support of the finding that these four priority public uses were determined to be compatible with the refuge purpose. The NPS suggested that a reference to the partnership between the NPS and FWS be included in the CD because the James River Segment Plan for the Captain John Smith Chesapeake NHT includes proposed actions that would occur on Presquile NWR. We incorporated a reference to this partnership in the subsection titled "FWS and NPS Collaboration in the Chesapeake Bay Watershed" (pages 3-4) of this final CD.

### **DETERMINATION (CHECK ONE BELOW):**

- Use is not compatible
- Use is compatible, with the following stipulations

### **STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

Presquile NWR has developed a list of criteria for determining whether any given refuge location would be appropriate for wildlife observation, photography, environmental education (including overnight accommodations), or interpretation. These criteria would apply to current and future programs, trails, and facilities, and are in addition to the joint Service-State Bald Eagle Protection Guidelines for Virginia (VDGIF 2008). Criteria are as follows:

Locations for wildlife-dependent public uses should:

- Provide an opportunity to view a variety of habitats and wildlife;

- Be safe for the access proposed at current use levels and proposed future use levels;
- Require minimal annual maintenance to ensure safe access and prevent habitat degradation;
- Have a low potential for fragmenting habitat or disturbing wildlife populations;
- Occur where less than 50 percent of the trail system's length occupies soil types rated as high or very high for compaction and/or erosiveness; and
- Predominately occupy previously modified substrate (graveled, cultivated, or filled), such as old roads and former farm fields.

Additional stipulations to ensure compatibility include:

- Presquile NWR regulations will be posted and enforced. Closed areas will be established as needed, posted, and enforced. Signs necessary for visitor information, directions, and safety will be kept current.
- Walking and hiking to facilitate wildlife observation, photography, environmental education, and interpretation is only compatible on designated trails.
- To promote public safety, accommodate other users, and reduce wildlife disturbance, only limited, unchaperoned visitor access for individuals and groups will be authorized, provided they receive prior permission in the form of a General SUP.
- Potential conflicts with other public uses and management activities will be minimized by requiring advanced permitting for all public access of unchaperoned individuals or groups. Refuge- or partner-sponsored events and programming will require preregistration. Visitor group sizes and visitation frequency will be limited during sensitive time periods for wildlife or in sensitive locations (i.e., wetlands).
- The JRA will coordinate with refuge staff, well in advance, to schedule and outline activities for all day-trip and overnight environmental education programming as stated in the existing MOU. The JRA will provide a description of proposed activities, location on the refuge, time of day or night, number of participants, so that potential impacts and avoidance measures can be determined. A General SUP, detailing request procedures, reporting policy, and other required content will be provided annually for joint signature between the FWS and JRA. The General SUP will list all conditions necessary to ensure compatibility.
- Increased visitation would only occur if adverse effects to refuge resources could be avoided and when a high quality visitor experience can be achieved.
- No activities will be allowed that may adversely impact any federally threatened or endangered species. The known presence of a threatened or endangered species will preclude any new use of an area until the Refuge Manager determines otherwise.
- Public use areas and facilities will be maintained in good, working or safe condition. Regularly used roads, trails, landings are distanced from sensitive habitats, migration corridors, and transition zones between adjacent habitats. If necessary, portions of trails may be closed or traffic rerouted away from hibernacula, wetlands, nesting sites, seeps, ravines, and coves. Where early spring migrating amphibians may be impacted by foot traffic (such as on the eastern forest/grassland interface), grass cover on trails through bottomland will keep trails moist. Graveling tread surfaces is done only where necessary. Canopy cover is maintained to encourage cool, moist forest floor in terrestrial buffer or migration zones and to protect wetland connectivity.
- We will evaluate sites and programs as needed to assess whether objectives are being met and to prevent site degradation. If evidence of unacceptable adverse impacts appears, the location(s) of activities will be rotated with secondary sites, curtailed, or discontinued.


- Best management practices will be used to avoid introductions of non-native, invasive plant species.
- Perimeter lighting of buildings will be reduced and incorporate cut-off shields to prevent unnecessary upward lighting. Motion sensor lighting and minimum wattage bulbs will further reduce light pollution and light attraction. A lights-out program will be developed for peak migration periods for various light-sensitive species.
- Bird-safe strategies will be used to reduce light trespass from interior and exterior sources during activities associated with overnight accommodations. In any new construction, smaller windows and non-reflective or screen-scrim-fitting window treatments will be used to reduce habitat reflections. Trees will be planted in front of large windows, within 3 ft.
- The FWS encourages limited watercraft traffic in the eagle concentration areas, adherence to the state guidelines, and raising public awareness about eagle protection and recovery on the James River.

**JUSTIFICATION:**

Wildlife observation, photography, environmental education, and interpretation are all priority public uses and are to receive enhanced consideration on refuges, according to the NWRSA. Providing increased wildlife-dependent recreational opportunities at Presquile NWR promotes visitor appreciation and support for the refuge, NWRSA, and FWS; engages communities in local habitat conservation efforts in the lower James River and the Chesapeake Bay; and instills a sense of ownership and stewardship ethic in refuge visitors.

Wildlife observation, photography, environmental education, and interpretation, as described above, will not detract from the purpose and intent of the refuge. Stipulations described will ensure proper control over the use and provide management flexibility should detrimental impact develop. Allowing this use furthers the mission of the NWRSA and FWS by expanding opportunities for wildlife dependent uses when compatible and consistent with sound fish and wildlife management. We have determined that wildlife observation, photography, environmental education, and interpretation will not materially interfere with, or detract from, the fulfillment of the NWRSA mission or the purposes for which the refuge was established.

**SIGNATURE:** Refuge Manager:  10/6/11  
(Signature and Date)

**CONCURRENCE:** Regional Chief:  10/10/2011  
(Signature and Date)

**MANDATORY 15 YEAR RE-EVALUATION DATE:** 10/10/2026

**LITERATURE CITED:**

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**Table B.4. Current Annual Administrative Costs Associated with Wildlife Observation, Photography, Environmental Education and Interpretation.**

Activities	Resource	Annual Duration	Rate <sup>1</sup>	Cost
Coordination, SUP processing, field assistance, infrastructure maintenance	Refuge Manager (GS-13)	6 hours	\$44 / hour	\$264
	Outdoor Recreation Planner (GS-11)	260 hours	\$31 / hour	\$8,060
	Maintenance Staff (WG-08)	16 hours	\$23 / hour	\$368
Monitoring, recording/reporting use statistics, evaluating resource impacts	Outdoor Recreation Planner (GS-11)	20 hours	\$31 / hour	\$620
	Wildlife Biologist (GS-11)	40 hours	\$31 / hour	\$1,240
Use of Facilities	Education Center	22 days	\$12 / day	\$500
Use of Equipment	Vehicle or watercraft	22 days	\$20 / day	\$1,000
<b>TOTAL</b>				<b>\$12,052</b>

Note: Some actions, and resulting costs, also support other approved public uses (i.e., hunt program).

<sup>1</sup> In 2011 dollars, base salary not including staff benefits at GS-Step 5 or WG-Step 3.

**Table B.5. Annual Visitation Limits**

Refuge Uses <i>Breakdown by Use Group</i>	Number of Visitors per Fiscal Year <sup>1</sup>					Visitation Limit per Fiscal Year After 2015 <sup>2</sup>	
	2010	2012	2013	2014	2015	Number of Visitors	Number of Visitor Use Days <sup>3</sup>
<b>Environmental Education</b>	<b>100</b>	<b>620</b>	<b>900</b>	<b>1160</b>	<b>1560</b>	<b>1940</b>	<b>5060</b>
Weekend Overnight	85	100	150	180	200	220	220
3Day Camp	0	300	450	600	900	1200	3600
5Day Camp	0	60	90	120	150	180	900
Teacher Workshops	0	40	60	80	100	100	100
Day Programs	15	120	150	180	210	240	240
<b>Hunting<sup>4</sup></b>	<b>91</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Wildlife Observation, Photography, and Interpretation<sup>5</sup></b>	<b>114</b>	<b>115</b>	<b>115</b>	<b>250</b>	<b>250</b>	<b>250</b>	<b>250</b>
<b>TOTAL</b>	<b>305</b>	<b>835</b>	<b>1115</b>	<b>1510</b>	<b>1910</b>	<b>2290</b>	<b>5410</b>

<sup>1</sup> Refuge visitation would be limited throughout the year to minimize human-caused disturbance to wildlife. The refuge would be open to visitors for up to 203 days each year. The number of visitor use days would vary by season as follows: 25 in winter, 77 in spring, 25 in summer, and 76 in fall.

<sup>2</sup> The visitation limit per fiscal year after 2015 may be subject to change based on the findings of annual evaluations for refuge uses and associated impacts within the next five years (fiscal years 2011 through 2015).

<sup>3</sup> Visitor Use Days equate to the number of visitors participating in activities at the refuge per day. For example, five refuge visitors on a single afternoon constitute five visitor use days while five visitors participating in a 3-day environmental education camp constitutes 15 visitor use days.

<sup>4</sup> Deer hunting is permitted for three days during November.

<sup>5</sup> Visitors often engage in wildlife observation, photography, and interpretive programs during a single visit.

Figure B.3. Location and relation of Presquile National Wildlife Refuge to conservation lands in the vicinity.

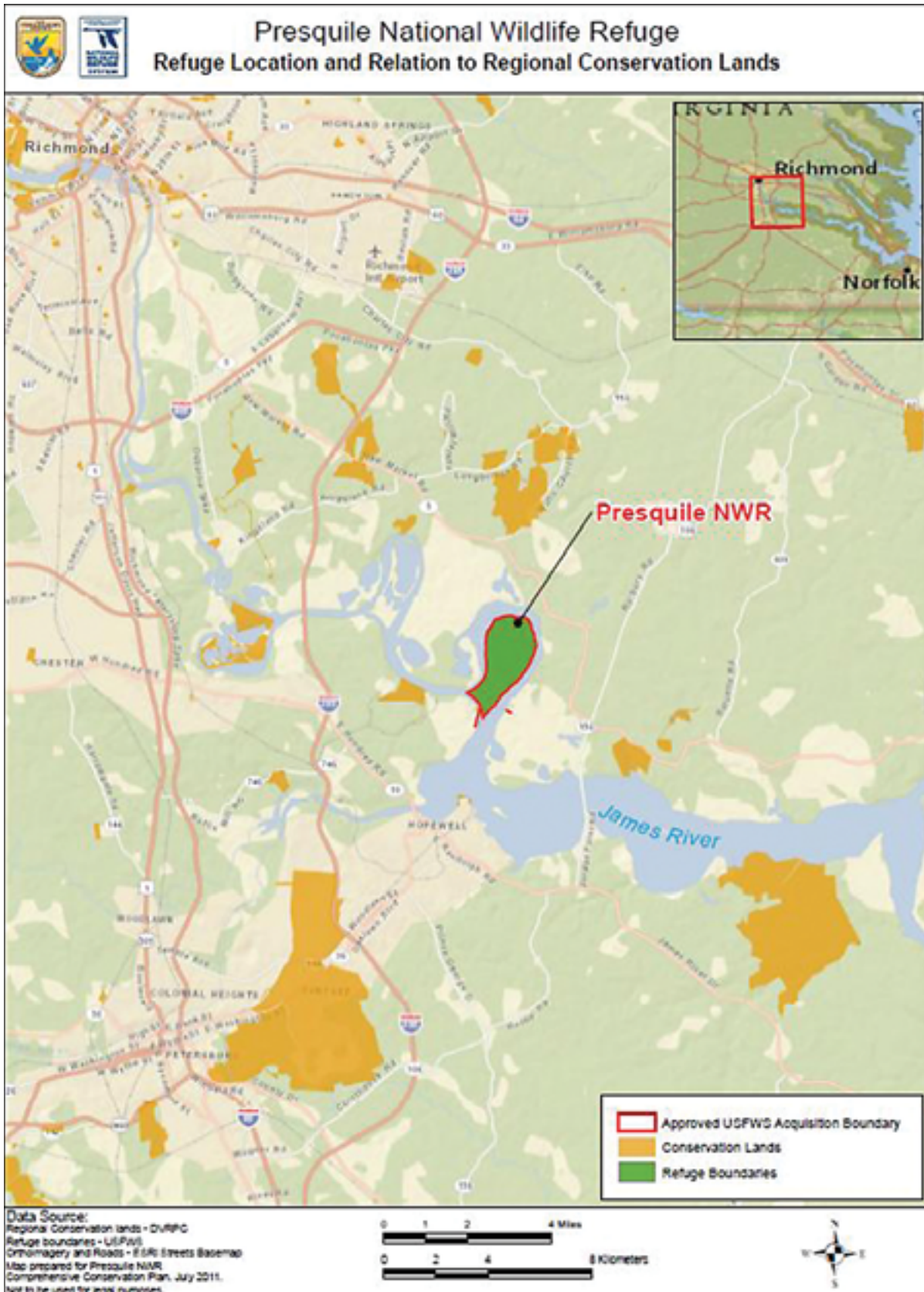


Figure B.4. Presquile National Wildlife Refuge Trail Map.

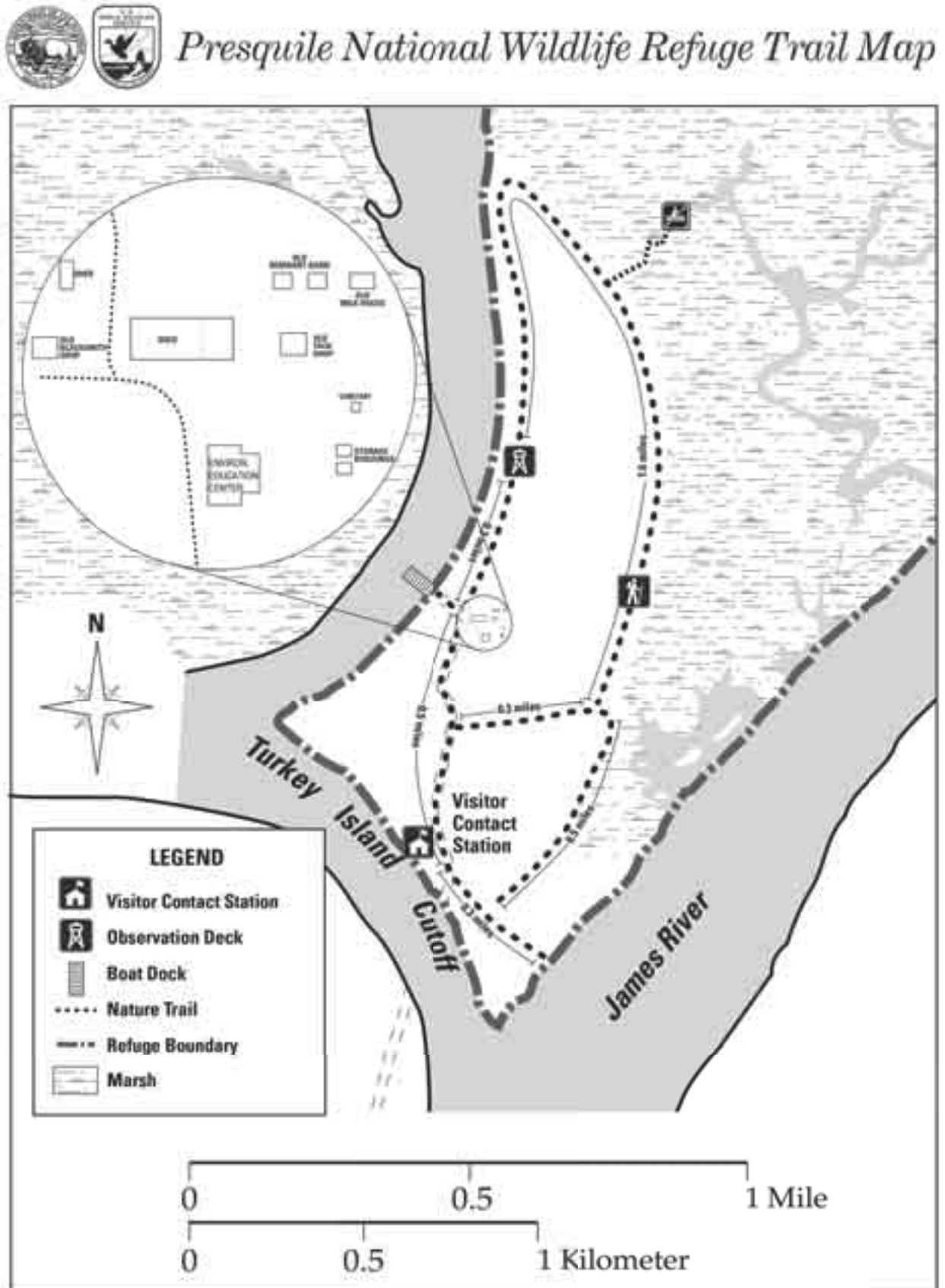


Figure 2. Presquile NWR trail map.



## Appendix C

Meghan Carfoglio/USFWS



*Pole barn after Hurricane Irene (August 2011)*

# **Refuge Operation Needs System and Service Asset Maintenance Management System Projects**

## Refuge Operation Needs and Service Asset Maintenance Management Systems

Presquile National Wildlife Refuge’s (NWR, refuge) budget requests contained in the Refuge Operating Needs System (RONS) and Service Asset and Maintenance Management System (SAMMS) databases include a wide variety of new projects and maintenance needs. The RONS and SAMMS lists are regularly updated to include priority projects. Contact the refuge for the most current RONS and SAMMS lists.

**Table C.1. Existing and Proposed Projects in the RONS Database for Presquile NWR**

Station Priority Rank	Project Description	Estimated One-time Cost	Recurring Base Cost	Total First Year Need	FTE
<b>EXISTING PROJECTS</b>					
1	Inventory and protect cultural resources	\$250,000	\$5,000	\$250,000	-
	<b>Totals</b>	<b>\$250,000</b>	<b>\$5,000</b>	<b>\$250,000</b>	<b>-</b>
<b>PROPOSED PROJECTS</b>					
1	Provide enhanced nature-dependent opportunities for the visiting public (Visitor Services Specialist)	-	\$106,614	\$106,614	1.0
2	Maintain and manage refuge facilities and equipment (Maintenance Worker)	-	\$72,371	\$72,371	1.0
3	Monitor and inventory biological health and impacts (Wildlife Biologist)	-	\$128,986	\$128,986	1.0
	<b>Totals</b>	<b>-</b>	<b>\$307,971</b>	<b>\$307,971</b>	<b>3.0</b>

*This ranking does not necessarily represent the Eastern Rivers NWR Complex ranking. The refuge manager may adjust priorities based on annual funding levels and regional priorities.*

**Table C.2. Existing and Proposed Projects in the SAMMS Database for Presquile NWR**

<b>Project Number</b>	<b>Project Description</b>	<b>Estimated Cost</b>
<b>EXISTING PROJECTS</b>		
98104756	Replace ferry ramp system	\$644,000
98104751	Rehabilitate equipment/maintenance building roof	\$68,000
	<b>Totals</b>	<b>\$712,000</b>
<b>PROPOSED PROJECTS</b>		
	Replace septic for Meneak Education Center	\$100,000
	Construct bunkhouse (in partnership with James River Association)	\$200,000
	Construct accessible ramp from dock	\$150,000
	Repair bulkhead	\$200,000
	Construct tidal marsh observation deck	\$35,000
	Remove carpentry building	\$45,000
	<b>Totals</b>	<b>\$730,000</b>

## Appendix D



Cyrus Brame/USFWS

*River escarpment tree planting*

## Wilderness Review

## Wilderness Review for Presquile National Wildlife Refuge

This appendix summarizes the wilderness review for the 1,329-acre Presquile National Wildlife Refuge (NWR, refuge). Presquile NWR is an island in the James River located in Chesterfield County, Virginia (map D-1). The purpose of a wilderness review is to identify and recommend for congressional designation National Wildlife Refuge System (Refuge System) lands and waters that merit inclusion into the National Wilderness Preservation System. Wilderness reviews are a required element of comprehensive conservation plans (CCPs) and conducted in accordance with the refuge planning process outlined in 602 FW 1 and 3, including interagency, public, and Tribal involvement, and National Environmental Policy Act (NEPA) compliance.

There are three phases to the wilderness review process: (1) inventory, (2) study, and (3) recommendation. In the inventory phase, lands and waters that meet the minimum criteria (described below) for wilderness are identified. Areas meeting these criteria are called wilderness study areas (WSAs). In the study phase, we evaluate WSAs to determine if they are suitable for wilderness designation, including an assessment of whether the WSA can be effectively managed as wilderness. In the recommendation phase, we use the findings of the study to determine if we will recommend a WSA for wilderness in the final CCP. We detail our wilderness recommendations from the Director of the Service, through the Secretary of the Interior and the President to Congress, in a wilderness study report. Congress has the authority to make final decisions on wilderness designation.

Areas recommended for designation are managed to maintain wilderness character in accordance with the management goals, objectives, and strategies outlined in the final CCP. That management direction will continue until Congress makes a decision, or until the CCP is amended to modify or remove the wilderness proposal.

In evaluating wilderness potential for Presquile NWR, we determined during the inventory phase that the minimum criteria were not met and therefore did not proceed with the study or recommendation phases. The result our inventory is presented below.

### Wilderness Inventory

The wilderness inventory is a broad look at refuge lands to identify WSAs. Only those refuge lands owned in fee title are considered. WSAs must meet the minimum criteria for wilderness identified in section 2 (c) of the Wilderness Act which are: size, naturalness, and opportunities for solitude or primitive recreation. Other supplemental values are evaluated, but not required. We evaluate areas and identify WSAs using those same criteria. Our inventory of this island-refuge, and the application of the wilderness criteria, are discussed below.

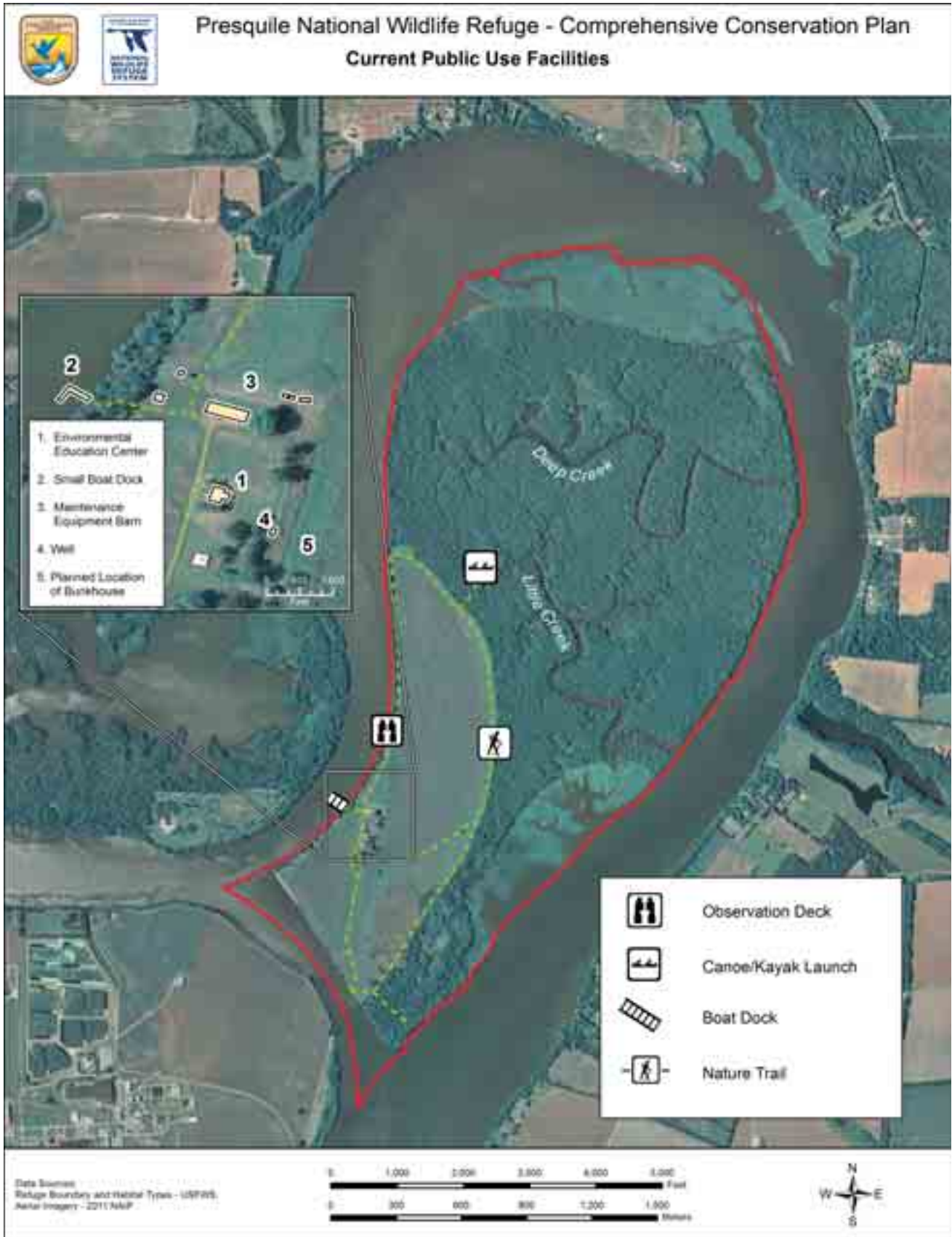
#### Evaluation of the Size Criteria

To evaluate the size criteria, we review every roadless area of 5,000 contiguous acres or more, and every roadless island. "Roadless" refers to the absence of improved roads suitable and maintained for public travel by means of motorized vehicles primarily intended for highway use.

The Service has interpreted the size criteria to be satisfied under the following situations:

- An area with over 5,000 contiguous acres. State and private lands are not included in making this acreage determination.
- A roadless island of any size. A roadless island is defined as an area surrounded by permanent waters or that is markedly distinguished from the surrounding lands by topographical or ecological features. We interpret a "road" to be something that is improved and maintained for legal street vehicles and for public travel.
- An area of less than 5,000 contiguous Federal acres that is of sufficient size as to make practicable its preservation and use in an unimpaired condition, and of a size suitable for wilderness management.
- An area of less than 5,000 contiguous Federal acres that is contiguous with a designated wilderness, recommended wilderness, or area under wilderness review by another Federal wilderness managing agency such as the Forest Service, National Park Service, or Bureau of Land Management.

Map D.1 Current Public Use Facilities on Presquile NWR



**Conclusion:** We have determined that Presquile NWR meets the size criteria due to the fact it is a roadless island, surrounded by the James River. An unimproved, grass-surface road exists for administrative use to allow staff, or a designee, to shuttle equipment and supplies from two refuge boat landings. Occasionally, vehicles also travel along the grass trails or across the old fields to distribute equipment and supplies, or to conduct management activities. However, there are no improved roads on the refuge, and public traffic is not allowed.

### Evaluation of Naturalness Criteria

To evaluate the naturalness criteria, we use the definition in section 2 (c) of the Wilderness Act that the area "... generally appears to have been affected primarily by the forces of nature with the imprint of man's work substantially unnoticeable." The area must appear natural to the average visitor rather than "pristine." The presence of historic landscape conditions is not required. An area may include some human impacts provided they are substantially unnoticeable in the unit as a whole. Significant human-caused hazards, such as the presence of unexploded ordnance from military activity, and the physical impacts of refuge management facilities and activities are also considered in evaluation of the naturalness criteria. An area may not be considered unnatural in appearance solely on the basis of the "sights and sounds" of human impacts and activities outside the boundary of the unit.

The cumulative effects of these factors in conjunction with refuge size and physiographic and vegetative characteristics were considered in the evaluation of naturalness for the refuge.

**Conclusion:** We have determined that Presquile NWR does not meet the naturalness criteria for several reasons. First, there are a number of facilities on the refuge (most are noted on map D-1).

They include the following cluster of facilities on about a 4-acre area of the refuge's uplands:

- A large, open-stall equipment storage barn (approximately 4,550 square feet);
- An education center (a one-story former residence, approximately 1,000 square feet);
- Five additional small outbuildings; and
- A planned bunkhouse to serve as an overnight facility for educational programs (approximately 1,750 square feet; capacity is approximately 36 people).

Public access to the refuge primarily occurs via the main boat landing which includes:

- A 30 by 8-foot floating dock, with a 20 by 4-foot aluminum gangway, attached to a pier with pilings and treated wood. The pier is 85 feet long and approximately 6 feet wide.
- Via a short ramp, the dock is attached to an elevated boardwalk that is approximately 60 feet long. The elevated boardwalk grades up to the refuge's uplands in proximity of the facilities noted above.

Visitor facilities on the refuge (located on map D-1) include:

- An elevated wooden viewing platform approximately 10 feet high;
- A 550 feet boardwalk, approximately 4 feet wide, made of recycled plastic and supported by metal 4 by 6-foot framing, extends out into the tidal wetlands;
- A small wooden pavilion/kiosk with shingled roof, approximately 15 by 15 foot, sits off the boardwalk and holds approximately 15 to 20 people and storage for paddles and vests; and
- A floating dock and ramp extend out from the end of the boardwalk. The dock is approximately 8 by 10 feet, and the ramp is approximately 4 by 10 feet.

Administrative access also occurs via a cable ferry that crosses from the mainland to a ramp in the southeast corner of the refuge. That ramp consists of:

- An iron frame over the water, approximately 20 feet wide by 35 feet long (see figure D-1); and
- Hoists and pilings approximately 20 feet tall by 30 feet wide are attached to the frame.

Another reason the refuge does not meet the "naturalness" criteria is because approximately 18 percent (or 234 acres) of the refuge's uplands is old agricultural field which was grazed and farmed as recently as 12

years ago, and is infested with Johnsongrass and other exotic plants. Johnsongrass, which was introduced as a livestock forage decades ago, is an invasive alien species with prolific seeding capabilities, is listed as “noxious” in Virginia, and is therefore subject to mandatory control established by county ordinance. Most visitors to the refuge from the surrounding agricultural region know this plant is invasive and a major problem. They understand its destructive impact on both native vegetation and desirable agricultural plants, and are well aware of the challenges with its control. In other words, most visitors would not look at those fields and consider them “natural.”

Service policy stipulates that offsite impacts cannot be the sole reason to eliminate an area from further consideration. However, they can be a factor. At Presquile NWR, there are significant offsite impacts in addition to the onsite impacts noted above, that support our determination that the refuge does not meet the naturalness criteria. As such, we believe the following additional reasons add cumulatively to those noted above to support our determination that the refuge does not meet the naturalness criteria. The James River is a major shipping channel leading from the Chesapeake Bay to Richmond, Virginia. Large barges and container shipping traffic occur immediately off the refuge approximately 2 to 3 times a week. Along the refuge boundary, the river width is less than 750 feet across, which creates a narrow shipping channel. Large ships or barges pass within 70 feet of the refuge and ships are either visible, or can be heard, from many locations on the refuge (see figure D-1). Other offsite impacts include the 450-acre Philip Morris USA industrial complex directly across the James River to the southwest of the refuge. An extensive layout of industrial buildings and several large smoke stacks are visible from the refuge uplands.

This stretch of the James River is also a popular route for large recreational motor boats, jet skies and other personal water craft, and for water skiing. Recreational boat traffic is very heavy during favorable weather conditions during the spring, summer, and fall seasons. The two interior creeks, when tides are favorable, are also very popular for anglers accessing by motor boats. Bass boats regularly access the interior of the refuge when tides allow. The tidal creeks are also popular with non-motorized boaters as well. The tidal creeks are state waters and not under the jurisdiction of the Service.

Finally, a 1,000-foot right of way from the center of the James River (500 feet on either side of the mainstem center, along the Turkey Island Cutoff and including the southern refuge shoreline), and a 50-acre area in the south east corner of the refuge (Area A), are part of perpetual right-of-way granted to the United States Army Corps of Engineers (USACOE) (see map D-2). The rights and easement allow the USACOE to excavate the cut away and remove those parts within the 1,000-foot area as needed to maintain the shipping channel, and also to deposit, with certain limitations, dredging material within Area A. These rights have not been exercised for decades, but they remain a right in perpetuity unless formally relinquished by the USACOE.

### **Evaluation of Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation**

To evaluate outstanding opportunities for solitude or primitive recreation, the area does not have to possess outstanding opportunities for both solitude and primitive and unconfined recreation, and does not need to have outstanding opportunities on every acre. Further, an area does not have to be open to public use and access to qualify under this criteria; Congress has designated a number of wilderness areas in the Refuge System that are closed to public access to protect resource values.

Opportunities for solitude refer to the ability of a visitor to be alone and secluded from other visitors in the area. Primitive and unconfined recreation means non-motorized, dispersed outdoor recreation activities that are compatible and do not require developed facilities or mechanical transport. These primitive recreation activities may provide opportunities to experience challenge and risk, self-reliance, and adventure.

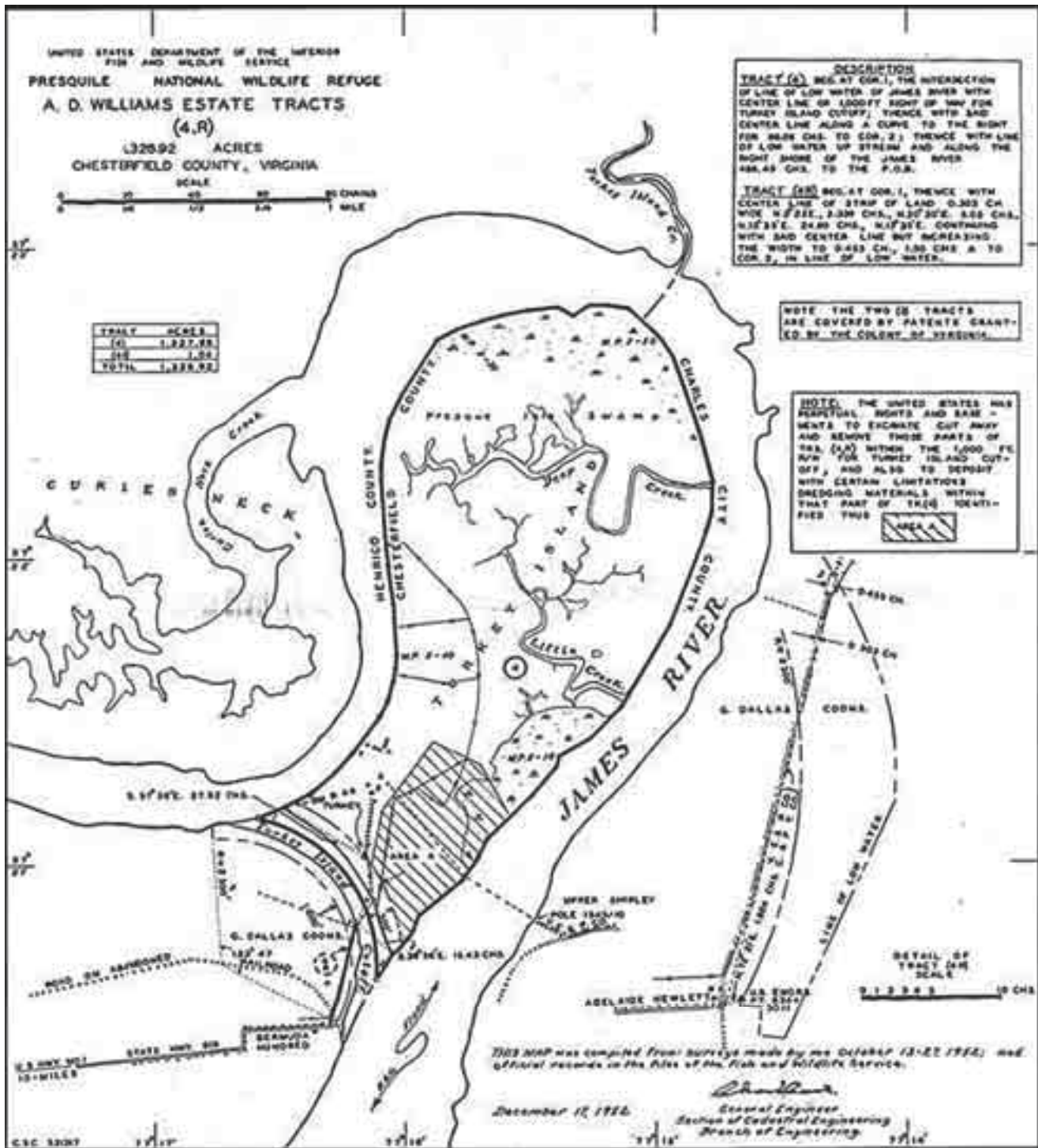
These two opportunity “elements” are not well defined by the Wilderness Act but, in most cases, can be expected to occur together. However, an outstanding opportunity for solitude may be present in an area offering only limited primitive recreation potential. Conversely, an area may be so attractive for recreation use that experiencing solitude is not an option.

In our evaluation, the following factors and their cumulative effects were the primary considerations in evaluating the availability of outstanding opportunities for solitude or primitive recreation:

- Island size
- Availability of vegetative screening
- Proximity to an industrial complex on the mainland



Map D.2 Original Easements as of Presquile NWR Establishment in 1953



- Presence of motorized activities
- Presence of refuge structures and activities

**Conclusion:** We have determined that Presquile NWR meets the criteria for providing solitude and primitive and unconfined recreation. Primarily, solitude can be experienced by visitors who access the approximately 800 acres of forested tidal swamp and river backwaters on the refuge. Accessing the interior of the swamp, a person can feel alone and secluded due to the screening provided by the vegetation. Some of the factors noted above that detract from the naturalness of the refuge in the tidal swamp area, may affect a visitor’s experience to this area depending on their sensitivity to those facilities and the level of activity. Visitors who have the only refuge access permit during their visit may also experience solitude along some segments of the refuge’s upland trails that are out of sight of the river.

Visitors accessing the refuge by canoe and kayak can, at times, experience primitive and unconfined recreation in the interior of the tidal creeks. However, in this same area, there is a regular presence of bass boats and other motorboats, which also frequent the oxbow and mainstem of the James River surrounding the refuge. Similar to what is mentioned above for the discussion on solitude, the facilities and level of activity may affect some visitor’s experience of primitive and unconfined recreation.

### **Evaluation of Supplemental Values**

Supplemental values are defined by the Wilderness Act as “...ecological, geological, or other features of scientific, educational, scenic, or historic value.” These values are not required for wilderness but their presence is considered during the evaluation.

**Conclusion:** Presquile NWR has several supplemental values related to the presence of archeological and historical resources, and wildlife and plants of conservation concern. All of these values are described in detail in chapter 2 in the draft CCP/EA. In brief, the refuge is part of the Lower James River Important Bird Area, an Audubon Society designation, due to the concentration of bald eagles, waterfowl, and other birds of high conservation concern. The federally listed sensitive joint-vetch occurs on the refuge, and the federally listed Atlantic sturgeon occurs just off refuge lands in the James River. The refuge has several cultural sites eligible for listing in the National Register of Historic Places. Recently, in conjunction with the completion of a comprehensive management plan for the Captain John Smith Chesapeake National Historic Trail, the refuge was recognized as an indigenous cultural landscape (NPS 2011).

### **Summary of Inventory Findings for Presquile NWR**

<b>Criteria</b>	<b>Result</b>
Size	meets
Naturalness	does not meet
Solitude or Primitive and Unconfined Recreation	meets
Supplemental values	meets

Our inventory concludes that not all of the minimum criteria were met and therefore, we are not establishing a WSA. Proceeding on to the study and recommendation phases is not necessary.

## Appendix E

Meghan Carfoglio/USFWS



*Refuge sign along Turkey Island Cutoff*

# **Federal Consistency Determination, State Historic Preservation Office Letter, and Compliance with Section 7 of the Endangered Species Act**

**FEDERAL CONSISTENCY DETERMINATION****Draft Comprehensive Conservation Plan / Environmental Assessment***for***Presquile National Wildlife Refuge  
Chesterfield County, Virginia****U.S. Fish and Wildlife Service  
Department of the Interior**

This document provides the Commonwealth of Virginia with the U.S. Fish and Wildlife Service's (the Service, we, our) Consistency Determination under the Coastal Zone Management Act Section 307(c)(1) and Title 15 Code of Federal Regulations (CFR) Part 930, Subpart C, for implementing the draft Comprehensive Conservation Plan / Environmental Assessment (draft CCP/EA) for Presquile National Wildlife Refuge (NWR), located in Chesterfield County, Virginia. This CCP would guide management of Presquile NWR over the next 15 years. The information in this Consistency Determination is provided pursuant to 15 CFR §930.39. The Service seeks concurrence from the Virginia Coastal Management Program (VCP) that alternative B (the Service-preferred alternative) as detailed in the draft CCP/EA is consistent, to the maximum extent practicable, with the enforceable policies of the VCP.

To streamline the administrative requirements of the CCP development process and environmental review, the Service prepared a combined document that evaluates the potential environmental impacts from implementing a CCP. The draft CCP/EA was prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended (42 USC §§ 4321-4347); the Council on Environmental Quality regulations for implementing NEPA (40 CFR §§ 1500-1508); and the Department of the Interior (516 DM 8) and Service (550 FW 3) policies. The draft CCP/EA also complies with Section 106 of the National Historic Preservation Act of 1966, as amended. Refer to section 1.3 of the draft CCP/EA for additional information regarding regulatory compliance.

**Background**

Presquile NWR is located in Chesterfield County, Virginia and is approximately 20 miles southeast of Richmond. The regional context of the project area is defined by the interactions of the nearby metropolitan area, the James River watershed, and the Chesapeake Bay Estuary (map 1.1 in the draft CCP/EA).

Presquile NWR was established in 1953, under the authority of the Migratory Bird Conservation Act of 1929 (45 Stat. 1222) as a gift under the provisions of the will of Dr. A.D. Williams, D.D.S. The purpose of the refuge is "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" (Migratory Bird Conservation Act, 16 U.S.C. § 715d). It is one of many important migratory bird stopover sites along the Atlantic Flyway, providing protected breeding habitat for State-listed threatened and endangered species, as well as many neotropical migrant bird species (map 1.2 of the draft CCP/EA).

The 1,329-acre refuge is comprised of a variety of wildlife habitats at Presquile NWR: open waters of the James River and associated backwaters, tidal swamp forest, tidal freshwater marshes, grasslands, mixed mesic forest (transitional and mature), and river escarpment. This total acreage includes one acre held by the Service in right-of-way easements on adjacent private properties.

**Project Description**

As detailed in chapter 3 of the draft CCP/EA, alternative B (the Service-preferred alternative) emphasizes the management of specific refuge habitats to support priority refuge species whose habitat needs benefit other species of conservation concern that are found around the refuge and in the larger landscape of the lower James River. In particular, we would emphasize habitat for priority birds identified in the Mid-Atlantic Coastal Plain bird conservation region (BCR 30), such as migratory waterfowl, waterbirds, forest-dependent songbirds, early successional forest species, and priority refuge resources of concern, including federally endangered Atlantic sturgeon and federally threatened sensitive joint-vetch.

We would:

- Maintain and restore the ecological integrity of wildlife habitats for species of conservation concern.
- Convert approximately 177 acres of grassland habitat to transitional mixed mesic forest habitat through natural succession, supplemented by invasive plant management and plantings (as needed).
- Maintain 46 acres of managed grassland for refuge administrative, educational, and interpretive purposes (e.g., 23 acres of regularly mown lawn, 23 acres of less-frequently mown grassland as pollinator habitat).
- Strive to maintain and restore ecological integrity of 11 acres of river escarpment habitat for the benefit of bald eagles, great blue herons and other wading birds, and work through partnerships to improve the natural and cultural resource condition monitoring along the shoreline, assess the potential to slow bank erosion and reduce sediment loading into the James River, and develop shoreline management and improvement projects.
- Increase our efforts to protect cultural resources on the refuge, as well as expand our understanding of the refuge's resources and their role in the area's cultural history.
- Expand our on-refuge environmental education program through our partnership with the James River Association (JRA).
- Establish Presquile NWR as the home of the James River Association Ecology School (the Ecology School), bringing an increased number of students to the refuge for overnight visits to participate in an expanded environmental education program.
- Continue the current 3-day deer hunting program and consider extending the season length to provide a higher quality hunt experience.

We identified that coordination and consultation with various State agency offices responsible for enforcing the policies of the VCP is an important action to be implemented by the refuge as it implements the CCP. The following list identifies strategies that would subject to the VCP enforceable policies:

- Protect and maintain the characteristics on refuge lands that contributed to the area's special designation as the Lower James River Important Bird Area and Anadromous Fish Use Area, as well as its contribution to other Special Status Area designations.
- Continue working toward stabilization and restoration of the refuge's shoreline by not opening the refuge for recreational fishing from the refuge shoreline (see appendix B), while working with the Virginia Department of Game and Inland Fisheries (VDGIF) to promote opportunities for public fishing on public waters and lands where allowed by State regulations.
- Participate in partnerships with communities and partners in the Chesapeake Bay watershed to implement the Strategy for Protecting and Restoring the Chesapeake Bay Watershed (Executive Order 13508) at the refuge, with an emphasis on land conservation and public access, and citizen stewardship.
- Implement the established partnership with the National Park Service, fulfilling the MOU in regards to the promotion of the Captain John Smith Chesapeake National Historic Trail (NHT) and Chesapeake Bay Gateways and Watertrails Network, at the refuge by enhancing place-based interpretation, providing public access, and fostering conservation and restoration of natural and cultural resources related to the Chesapeake Bay through programming, outreach, and citizen involvement.
- Restore native vegetation, with priority action given to the most degraded sites.
- Reduce the carbon footprint of facilities, vehicles, workforce, and operations by using energy efficient equipment, where feasible, and maintaining and constructing facilities using sustainable green building technologies (see appendix C of the draft CCP/EA).

The draft CCP/EA was developed with sufficient detail to account for the greatest potential impacts that could result from the proposed actions identified under both alternatives. However, additional NEPA analysis will be necessary for certain types of actions, even once we adopt a final CCP. Where decisions have not been made in the draft CCP/EA, but must be made later, we analyze the impacts of the possible range of alternatives in this document. During the planning process for those plans and actions, we will consult with the Virginia Department of Environmental Quality (VDEQ) to determine if additional FCDs are needed.

Examples of proposed actions that may require further analysis include:

- Shoreline stabilization projects involving construction;
- Water-based transportation facility improvements involving construction; and
- Activities related to the Captain John Smith Chesapeake NHT involving construction.

### **Effect on Resources**

Implementation of the preferred alternative would impact the natural and human environments, varying in duration, context, type, and intensity. Chapter 4 and the summary table comparison of consequences (table 4.3) of the draft CCP/EA details impacts in the local, regional, and national contexts, over the short- and long-term, and identifies the intensity of beneficial and adverse impacts that would directly, indirectly, and cumulatively result from implementation of alternative B.

In summary, implementation of Alternative B would affect the land or water uses or natural resources of Virginia in the following manner:

**Air Quality**—Long-term benefits of air filtering and carbon sequestration would result from managing 981 acres of forested refuge lands. Emissions generated by maintaining 177 acres of grassland by mowing and prescribed burning would be eliminated. Long-term, adverse impacts on local air quality would negligibly increase from more frequent use of fuel-burning engines of boats to transport visitors to and from the refuge. None of our actions would violate EPA standards, and all actions would be undertaken to ensure compliance with the Clean Air Act.

To reduce potential adverse impacts on local air quality, we would follow guidance provided State agencies regarding construction project design and implementation, including the minimization of vehicle idling, use of precautionary measures to restrict emissions of volatile organic compounds and oxides of nitrogen, and minimization of fugitive dust.

**Hydrology and Water Quality**—Long-term, negligible, beneficial impacts on hydrology and water quality in the refuge vicinity would result from the continued protection of soils, wetlands, and waterways within the refuge boundary. Our increased efforts to inventory and monitor aquatic resources would inform specific refuge management decisions that have the potential to impact hydrology and water quality in the refuge vicinity. Land-disturbing activities on the refuge, such as trail maintenance and facility management, have the potential to negligibly and adversely impact local water quality.

To reduce potential adverse impacts on local hydrology and water quality, we would employ best management practices when conducting land-disturbing activities. As needed, we would consult with State offices regarding permitting applicability and requirements to ensure compliance with applicable Federal and State laws and regulations, as well as Chesterfield County's ordinance for the protection of Resource Management and Protection Areas.

**Soils**—Long-term, beneficial impacts on soils would result from maintaining the land cover with natural vegetation, conducting few activities with the potential to disturb soils, and allowing public use on a limited acreage and in designated areas. We would employ and maintain sediment and erosion control measures to minimize the potential for soils to migrate during land-disturbing activities (e.g., facility maintenance and construction). We would continue to plant and maintain vegetation to help control erosion along the refuge's shoreline. We anticipate working with other Federal and State agencies to investigate options for reducing

erosion of lands along the Turkey Island Cutoff and deposition of sediment in the James River oxbows. In the long-term, increased refuge visitation has the potential to adversely impact soils via compaction.

To reduce potential adverse impacts to soils, we would consult with State offices regarding permit applicability prior to conducting activities that have the potential to impact tidal wetlands, disturb land, or contaminate soils.

**Freshwater Wetland Habitats and Vegetation**—Long-term, beneficial impacts on freshwater wetland habitats and vegetation would result from our continued protection and minimal intervention efforts to protect the ecological integrity of the refuge's tidal swamp forest, tidal freshwater marsh, and riverine tidal habitats. We would establish a long-term monitoring effort to serve as an early detection and inform a rapid response in habitats due to invasive species, global climate change, or storm events. We would partner with other Federal and State agencies to conduct biological monitoring, as well as to improve interagency coordination on actions with the potential to adversely impact known populations of plant and animal populations associated with the freshwater wetland habitats within and surrounding the refuge. In the long-term, beneficial impacts would result from continued efforts to protect the refuge's shoreline and designating areas for appropriate and compatible public uses.

Since wetlands management and protection is a Federal trust responsibility and our highest priority for the refuge, we would take all necessary precautions to avoid adverse impacts to wetlands. However, we would continue to conduct actions that have the potential to negligibly and adversely impact freshwater wetland habitats and vegetation, such as trail maintenance and facility maintenance. To reduce potential adverse impacts to wetlands and vegetation, we would consult with State offices regarding best management practices to be employed on a project-specific basis and acquire permits prior to conducting activities as warranted.

**Upland Habitat and Vegetation**—Long-term, beneficial impacts on upland habitat and vegetation would result from our conversion of 177 acres of grassland to forest. We anticipate that this conversion would require less active management than trying to reclaim areas overgrown with invasive species such as Canada thistle, Johnsongrass, crab grass, and rye. We would supplement the natural succession of the grasslands to forest with plantings of native trees and shrubs, controlling nonnative plants, and conducting prescribed burns. Over time, the mature forest block size would increase and improve connectivity between the existing forests, wetlands, and riparian habitats of the refuge. We would restore and maintain the ecological integrity of upland habitats through inventory, monitoring, and active habitat management. Appropriate public uses would continue to be conducted in designated areas in accordance with refuge-specific stipulations to ensure compatibility with the refuge's purpose (see appendix B).

**Species of Special Concern**—Long-term, beneficial impacts for various species of special concern would result from active habitat management efforts and limitations on public uses. Benefits for the federally threatened sensitive joint-vetch would result from our efforts to preserving the refuge's tidal freshwater marsh habitat, which includes restricting public access to these areas and improving interagency coordination on public uses on lands and waters surrounding the refuge. Benefits to the federally endangered Atlantic sturgeon would result from continued support of efforts to monitor populations and conduct experimental habitat improvements in the vicinity of the refuge. Benefits to the delisted bald eagle would result from continued protection of nesting and foraging habitat on the refuge, following time-of-year restrictions to limit disturbance of this species, and limitations on public uses in the vicinity of active bald eagle nests. We also emphasize interagency coordination regarding the protection and maintenance of species of special concern, while continuing to offer recreational public uses in a manner that is appropriate and compatible with the refuge's purpose.

**Birds**—Long-term, beneficial impacts on birds would result from implementation of the CCP. Preservation of 738 acres of tidal swamp forest, managing 197 acres of transitional mixed mesic forest, and maintaining 46 acres of mature mixed mesic forest would continue to provide important breeding and migratory stopover habitat for priority refuge resources of concern such as prothonotary warbler, bald eagle, rusty blackbird, and other forest breeding landbirds. We expect minimal disturbance to breeding and migrating birds from trail maintenance, invasive species control activities, mowing, and other management activities. The conversion of 177 acres of grassland to mature mixed mesic forest would result in an initial transitional shrub stage, which would benefit priority refuge birds of concern such as the prairie warbler, field sparrow, and American woodcock. This transition would provide benefits to species that utilize early successional forest habitat for up to 20 years. The transition of 200 acres of grassland to mixed mesic forest would reduce available habitat for migratory Canada geese on the refuge, as well as for grasshopper sparrow, field sparrow, American woodcock,

and northern bobwhite. Beyond the timeframe of this CCP, the eventual conversion of grassland to mature mixed mesic forest would benefit a different suite of species such as scarlet tanager and wood thrush, and for other species of conservation concern such as Louisiana waterthrush and other forest breeding landbirds.

Preserving of 189 acres of tidal freshwater marsh would also provide important breeding and migratory stopover habitat for waterfowl such as American black duck, wood duck, and waterbirds of conservation concern such as the American bittern. We would continue to coordinate with State agencies by sharing information about wildlife populations and habitat management strategies, especially regarding protection of State endangered species. We would also increase partnerships and the use of volunteers and citizen scientists to collect information on species of concern.

Since some disturbance to breeding birds is likely from public use of the refuge, we would continue to allow appropriate and compatible public uses in designated areas and in accordance with stipulations to ensure compatibility (see appendix B). Birds that occupy the periphery of the refuge may be more likely affected by human activity and associated noise. Under both alternatives, we would continue to maintain the closure of waterfowl hunting around the refuge, providing protection to migratory waterfowl, wetland, and waterbird species that use tidal swamp forest, tidal freshwater marsh, and riverine habitats on the refuge.

**Fisheries**—Long-term, beneficial impacts on fisheries would result from our efforts to protect, maintain, and restore habitats for native wildlife; protect water quality minimizing erosion of the refuge's shoreline and sediment deposition loads in waterways; and improved interagency coordination and partnership support for fisheries monitoring and management. We would also continue to support recreational fishing on public lands and waters where allowed by State regulations. Our continued efforts to minimize the existing issue of shoreline erosion would reduce the refuge's adverse impacts on adjacent waterways and fish habitat. These efforts to would contribute beneficially to fisheries adjacent to, and down river from, the refuge.

**Mammals**—Long-term, beneficial impacts to larger mammals would result from converting 177 acres of grassland to forest, a shift that improves habitat connectivity between the existing mature mixed mesic forest and tidal swamp forest habitats. We also emphasize interagency coordination to ensure that the refuge offers a quality public deer hunting program.

**Reptiles and Amphibians**—Long-term, beneficial impacts to amphibian and reptile populations would result from continued maintenance of habitats that afford hibernation, foraging, and breeding habitat on the refuge and conversion of grassland to forest. Invasive plant control to promote native plant food species would also be beneficial. Increased visitation could potentially result in added off-trail usage impacts and disturbance as a result of non-compliance with permit conditions. Service staff would monitor impacts adjacent to trails and shorelines to prevent or correct any unauthorized off-trail use or added disturbance that might influence impacts on native amphibians and reptiles.

**Invertebrates**—Long-term, adverse impacts to invertebrates that inhabit grasslands would result. However, 46 acres of managed grassland would be maintained for administrative and educational purposes, including a small demonstration native planting areas focusing on invertebrate pollinator habitat. In the long-term, forest-dwelling invertebrates would benefit from conversion of grassland to forest.

**Public Uses**—Long-term, local and regional, minor to moderate, beneficial impacts would result from offering an increased number of higher quality programs for a larger audience, both on and off the refuge. Through our partnerships, our potential to achieve the goal of inspiring appreciation and stewardship of the refuge in relation to the James River watershed, Chesapeake Bay Estuary, and the National Wildlife Refuge System would increase. By telling a more complete story of the area's significance to Native Indians and early European settlers, our efforts would promote a deeper understanding and appreciation of America's diverse peoples and inspire refuge stewardship. We would maintain the refuge closed to recreational fishing, which would continue to have no impact on recreational fisheries or the availability of fishing opportunities in the refuge vicinity. Long-term, minor to moderate, beneficial impacts for the hunting community would result from our continued offering of public deer hunting opportunities and our efforts to explore additional enhancements through program expansion. Maintaining our permit requirement for refuge visitors facilitates direct communications regarding resource protection, minimization of conflicts with wildlife use of the refuge, and refuge operations.



## Consistency Determination

### *Enforceable Policies*

The VCP contains the following applicable enforceable policies. For each enforceable policy, specific actions to be implemented under alternative B are described.

**Fisheries Management**—Administered by Marine Resources Commission (MRC) and VDGIF, this program stresses the conservation and enhancement of shellfish and finfish resources and the promotion of commercial and recreational fisheries (Code of Virginia §28.2-200 through §28.2-713, §29.1-100 through §29.1-570, or §3.1-249.59 through §3.1-249.62).

We anticipate conducting additional investigation, assessment, and analysis of management alternatives to reduce adverse impacts to shellfish and finfish habitat currently resulting from refuge shoreline erosion and sediment deposition in the James River conservation and enhancement of shellfish and finfish resources. In an effort to limit any additional erosion of the refuge's banks, we would neither open the refuge to fishing from our land nor construct any new facilities on the refuge to promote recreational fishing. However, we would promote recreational fishing on waters and lands where permitted through our partnership with VDGIF.

**Subaqueous Lands Management**—Administered by MRC, this program establishes conditions for granting permits for encroachments in, on, or over state-owned submerged lands throughout the Commonwealth (Code of Virginia §28.2-1200 through §28.2-1213).

We anticipate conducting additional consultation with the MRC prior to implementing actions that would affect subaqueous lands or qualify as channel-ward encroachments on tidal waterways. Actions with the potential to adversely affect subaqueous lands are the potential to construct a tidal marsh observation deck; install new and maintain existing shoreline stabilization features; alter existing or construct new water-based transportation facilities. We would consult with State agencies early in the project planning phase to ensure consistency with the enforceable policies of the VCP. Permitting and site plan approvals would be acquired prior to implementing construction activities with the potential to adversely impact subaqueous lands.

**Wetlands Management**—Administered by MRC and VDEQ, the wetlands management program preserves and protects tidal wetlands (Code of Virginia §28.2-1301 through §28.2-1320 or § 62.1-44.15.5).

The protection of wetlands is of high management priority for our agency and at this refuge. We strive to avoid adverse impacts on wetlands and surface waters. However, where avoidance can not be achieved, we strive to minimize adverse impacts by minimizing land disturbance and impervious cover.

As identified in our draft CCP/EA, we would establish a long-term monitoring program to inform management actions aimed to protect wetlands on the refuge and adjacent to the refuge. In the future, we anticipate consulting with the State for individual projects for which site-specific planning has not yet been completed. Future projects with the potential to impact wetlands and waterways include the proposed construction of a tidal marsh observation deck and proposed water-based transportation facility improvements. Early in the planning phase for each of these projects, we would consult with MRC and VDEQ to identify the most appropriate best management practices to be employed to ensure the protection of wetlands and surface waters, as well as identify permitting or plan approvals required prior to project implementation.

**Dunes Management**—Administered by MRC, the purpose of this program is to prevent the destruction and/or alteration of primary dunes (Code of Virginia §28.2-1400 through §28.2-1420).

None of the actions to be implemented under alternative B would alter dunes in Virginia because dunes do not occur on the refuge or in the refuge vicinity.

**Non-point Source Pollution Control**—Administered by the Virginia Department of Conservation and Recreation (DCR), the Virginia Erosion and Sediment Control Law and Regulations (VESCL&R) are intended to minimize non-point source pollution entering Virginia's waterways (Code of Virginia §10.1-560 et seq).

As identified in our draft CCP/EA, we would manage nonnative plant species using herbicides. We would take all appropriate steps to minimize the potential to contaminate soils or cause runoff into the river when applying herbicide, including using the minimum effective dosage, using application methods that minimize non-target effects, applying during optimal growth stage for effectiveness, applying in optimal weather conditions, and adhering to licensing requirements and other Federal, State, and local regulations. We would minimize the potential for adverse impacts to the environment and humans by using only approved herbicides, developing and following a spill plan, and using the herbicide as instructed by the manufacturer and according to pesticide use plans approved by our regional contaminants coordinator.

Hazardous materials and wastes would be stored, transported, and disposed of in accordance with applicable laws and regulations. We would consult with VDEQ regarding identification of approved solid waste and hazardous waste disposal sites, as well as opportunities to reuse and recycle non-hazardous materials.

Early in the planning phase for facility maintenance and construction projects, we would consult with DCR to identify the most appropriate best management practices to limit potential for non-point source pollution generation, as well as identify permitting or plan approvals required prior to project implementation. Actions with the potential to disturb 2,500 square feet or more of land and/or generate non-point source pollution include the maintenance of existing, or construction of new, shoreline stabilization features and water-based transportation facilities.

**Point Source Pollution Control**—Administered by the State Water Control Board, the National Pollutant Discharge Elimination System permit program regulates point source discharges to Virginia’s waterways (Code of Virginia §62.1-44.15).

None of the actions proposed in our draft CCP/EA would generate a new point source discharge, or alter of any existing point source discharge, in to Virginia’s waterways. We would consult with DEQ regarding future maintenance or construction projects to determine which actions would be considered a new point source discharge and proceed with permitting and project approvals as needed.

**Shoreline Sanitation**—Administered by the Department of Health (VDH), this program regulates the installation of septic tanks to protect public health and the environment (Code of Virginia §32.1-164 through §32.1-165).

As identified in our draft CCP/EA, we anticipate conducting maintenance on the existing septic system serving the refuge’s Menenak Discovery Center and equipment storage barn. In the near future, we anticipate consulting with VDH regarding septic system maintenance and groundwater well operation to ensure protection of public health and the environment.

**Air Pollution Control**—Administered by the State Air Pollution Control Board, this program implements the Federal Clean Air Act through a legally enforceable State Implementation Plan (Code of Virginia §10.1-1300 through 10.1-1320).

As identified in our draft CCP/EA, none of our actions would violate EPA standards for air quality. All actions would be undertaken to ensure compliance with the Clean Air Act. To reduce potential adverse impacts on local air quality, we would follow guidance provided the VDEQ regarding construction project design and implementation, including the minimization of vehicle idling, use of precautionary measures to restrict emissions of volatile organic compounds and oxides of nitrogen, and minimization of fugitive dust. On a project-specific basis, we would consult with State agencies regarding permit requirements for boilers or fuel-burning equipment that may be used during facility maintenance or construction activities. We would continue to coordinate with State offices regarding prescribed burning as needed.

**Coastal Lands Management**—Administered by the DCR’s Division of Stormwater Management, Local Implementation (DSM-LI) administers the coastal lands management enforceable policy of the VCP which is governed by the Chesapeake Bay Preservation Act and Chesapeake Bay Preservation Area Designation and Management Regulations (Code of Virginia §§ 10.1-2100 through 10.1-2114, the Chesapeake Bay Preservation Area Designation and Management Regulations, or 9 VAC10-20-10 et seq).

Since the entire refuge is located within either the Chesapeake Bay Resource Protection Area (RPA) or the Resource Management Area (RMA), we would consult with State offices to ensure the protection of coastal lands. Actions to be undertaken within the RPA include maintenance and use of water-dependent features (e.g., maintenance of water-based transportation facilities and bulkhead, construction of tidal marsh observation deck). We would also conduct resource protection activities along the shoreline (e.g., nonnative plant management, planting of native trees and shrubs, documentation of archaeological resources). Actions that would occur within the RMA include conducting archaeological investigations, planting of native trees and shrubs, maintenance of a 3.5-mile nature trail by mowing, maintenance of the septic system serving the Menenak Discovery Center and equipment shed, and the concentration of visitors in designated public use areas. We would consult with DCR regarding best management practices, minimizing land disturbance and impervious cover, and the protection of native vegetation.

#### *Advisory Policies*

Although not required for the purposes of consistency, in accordance with 15 CFR §930.39(c), we considered the advisory policies of the VCP as well.

**Geographical Areas of Particular Concern**—Coastal natural resource areas (e.g., wetlands; aquatic spawning, nursery, and feeding grounds, significant wildlife habitat areas, public recreational areas, and underwater historic sites) are vital to estuarine and marine ecosystems and receive special attention from the Commonwealth because of their conservation, recreational, ecological, and aesthetic values. Coastal natural hazard areas are vulnerable to continuing and severe erosion and are susceptible to wind, tidal, and storm-related damage. Waterfront development areas are vital to the Commonwealth because of the limited number of areas suitable for waterfront activities.

The diversity of conservation, ecological, recreational, and aesthetic values associated with Presquile NWR are detailed in chapter 2 of the draft CCP/EA. As a unit of the National Wildlife Refuge System, the paramount purpose of this refuge is to serve as an inviolate sanctuary for migratory birds. We also support scientific research regarding the breeding of the Federally endangered Atlantic sturgeon in the refuge vicinity. The refuge has been opened for five priority, wildlife-dependent, recreational uses and one general public use, each of which has been found to be appropriate and compatible with the refuge's purpose (refer to appendix B).

As discussed earlier in this FCD, we anticipate consulting with VDEQ regarding water-based transportation facility improvements and shoreline structures on the refuge in the near future. We aim design and site facilities where the potential for property damage due to storms or shoreline erosion can be minimized.

Implementation of alternative B would have no direct impact on commercial ports, commercial fishing piers or community waterfronts in the refuge vicinity.

**Shorefront Access Planning and Protection**—The Commonwealth values maintenance of shorefront access for public recreational uses, while protecting the historic features of waterfront properties.

Implementation of alternative B would have no direct impact on Virginia's 25 miles of public beaches.

Implementation of alternative B would be consistent, to the maximum extent practicable, with the 2007 Virginia Outdoors Plan (VOP). Our partnership efforts with the JRA, National Park Service, and others exemplify our commitment to accommodate public uses of the refuge that are appropriate and compatible. We would increase the availability and quality of wildlife-dependent recreational uses on the refuge, as well as increase our outreach efforts through partners with shared conservation goals.

Implementation of alternative B would have direct impacts on recreational uses and values associated with Presquile NWR and the Captain John Smith Chesapeake NHT. Through our continued coordination and collaboration, we would maintain and protect recreational values associated with the refuge and the NHT while protecting natural and cultural resources for the enjoyment of future generations.

Implementation of alternative B would have no direct impact on waterfront recreational land acquisition opportunities in the Commonwealth.

As discussed earlier in this FCD, we anticipate consulting with VDEQ regarding water-based transportation facility improvements and shoreline structures on the refuge. Refuge facilities would be designed, constructed, and maintained to provide points of water access in support of refuge operations and visitor access when conducted in accordance with the stipulations identified for specific, appropriate, and compatible public uses (see appendix B).

As detailed in chapter 2 of the draft CCP/EA, the refuge has a long history of human settlement and development. We would use a proactive approach to interagency coordination for the protection of the refuge's cultural resources. Through our partnerships, we would promote cultural resource stewardship and appreciation both on and off the refuge in educational programs and interpretive media.

### *Finding*

Based on this information, data, and analysis, the Service finds that alternative B (the preferred alternative) of the draft CCP/EA for Presquile NWR is consistent, to the maximum extent practicable, with the enforceable policies of the VCP. Although not required for the purposes of consistency, we find that alternative B is in line with the VCP advisory policies when following them will not materially interfere with, or detract from, the fulfillment of the National Wildlife Refuge System mission or the purposes for which the refuge was established.

### **Concurrence Request**

Pursuant to 15 CFR §930.41, the VCP has 60 days from the receipt of this letter in which to concur with or object to this Consistency Determination, or to request an extension under 15 CFR §930.41(b). Virginia's concurrence will be presumed if its response is not received by the Service on the 60th day from receipt of this determination. The State's response should be sent to:

Andy Hofmann, Refuge Manager  
Eastern Virginia Rivers NWR Complex  
336 Wilna Rd  
P.O. Box 1030  
Warsaw, VA 22572

The Service would implement alternative B (the preferred alternative) upon adoption of the CCP by the Northeast Regional Director of the U.S. Fish and Wildlife Service. Adoption of the CCP would be documented in a Finding of No Significant Impact, if appropriate, to satisfy NEPA requirements. To complete the CCP development process, we will produce a final CCP.



## COMMONWEALTH of VIRGINIA

### Department of Historic Resources

2801 Kensington Avenue, Richmond, Virginia 23221

Douglas W. Domenech  
Secretary of Natural Resources

Kathleen S. Kilpatrick  
Director

Tel: (804) 367-2323  
Fax: (804) 367-2391  
TDD: (804) 367-2386  
www.dhr.virginia.gov

May 23, 2012

Nancy L. McGarigal  
Fish and Wildlife Service  
NWRS Planning Team Leader, Region 5  
Hadley, MA 01035-9589

Re: FWS/Region 5/NWRS  
Draft Comprehensive Conservation Plan and Environmental Assessment  
Presquile National Wildlife Refuge  
DHR Project No. 2008-0628

Dear Ms. McGarigal:

Thank you for providing us with an internal review copy of the Presquile National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment (CCP/EA). We fully support the Service's Preferred Alternative, Alternative B. The draft CCP is well written and very thorough. We note that the recommendations made in the Archaeological Overview and Study (Goode, 2008) are carefully considered and presented. We are especially pleased to see the inclusion of the indigenous cultural landscape in the discussion of the affected environment and in the plans for future environmental education.

We offer a few minor comments for your consideration in preparing the final document:

1. Chapter 3. Alternatives. Section 3.4.3 page 3-15. It is stated that the short-term recommendations made in the Goode report include conducting a controlled surface collection, using an archaeologist approved by our RHPO, before ground disturbance activities occur. This appears to be a misunderstanding of the recommendation made on page 109 of that report, namely: *If refuge maintenance requires plowing of locations, then an archaeologist should conduct surface collection. In the past visitors have reported artifacts from plowed areas.* Ground disturbance activities will require consultation with the Regional Historic Preservation Officer. In plowed areas, surface collection may be sufficient. However, ground disturbance activities may also require a program of subsurface testing prior to any action that might affect intact cultural levels or features. The decision on the level of effort will be made by the RHPO in consultation with the State Historic Preservation Officer.
2. Again, on pages 3-15 and 3-16. I regret to inform you that the Virginia Council on Indians will no longer exist after June 30 of this year. Nevertheless continuing to consult with Native American communities in Virginia is an important goal. Consultation with the six Virginia tribes mentioned should be conducted directly. We sincerely hope that Deanna Beacham will remain in some capacity to continue to assist with sharing information about how the refuge's various natural resources were part of the lifeways of the Appamattuck Indians.
3. We support the Service's goals of protecting the shoreline from further erosion and promoting natural forest succession. Please note, however, that both tree planting and allowing natural succession to proceed has the potential to affect archaeological sites. As trees grow, the roots may severely damage intact cultural levels and features. Alternative B proposes a proactive Section 110 effort to identify and evaluate archaeological sites. This effort should take place prior to implementing planting and removal of acreage from grasslands to ensure that appropriate management plans can be developed for vulnerable archaeological sites.

Administrative Services  
10 Courthouse Ave.  
Petersburg, VA 23803  
Tel: (804) 862-6416  
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Capital Region Office  
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Tidewater Region Office  
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Western Region Office  
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Northern Region Office  
5357 Main Street  
PO Box 519  
Stephens City, VA 22655  
Tel: (540) 868-7031  
Fax: (540) 868-7033

4. On the document distribution list, I am listed as director of Virginia's State Historic Preservation Office. Please note that I am an archaeologist and senior policy analyst in the Office of Resource Services and Review. Our director and State Historic Preservation Officer is Kathleen S. Kilpatrick.

If you have any questions concerning our comments, or if we may provide any further assistance, please do not hesitate to contact me at (804) 482-6088; e-mail [ethel.eaton@dhr.virginia.gov](mailto:ethel.eaton@dhr.virginia.gov). We look forward to working with you on future projects.

Sincerely,



Ethel R. Eaton, Ph.D., Senior Policy Analyst  
Division of Resource Services and Review

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**INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM**

Originating Person and Station Name: **Cyrus Brame, Eastern Virginia Rivers National Wildlife Refuge (NWR) Complex**

Telephone and Facsimile Numbers: **telephone: 804-829-9020, fax: 804-829-9606**

Date: **08/23/2012**

Project Title: **Selection of Preferred Comprehensive Conservation Plan (CCP) Alternative-Presquile NWR**

I. Service Program: **Refuges**

II. Geographic Area Including Name of County/City and State and Specific Project Location:

**Presquile NWR, Chesterfield County, Virginia**

III. Proposed Activity:

Refuges are required by the Refuge Improvement Act of 1997 to complete a CCP and by the National Environmental Policy Act to complete an Environmental Assessment (EA) to accompany the CCP. The combined documents serve to guide refuge management decisions over the next 15 years, and inform the public and other interested parties, agencies, partners, and communities of these plans. Presquile NWR CCP/EA document explains the refuge mission and goals, describes the affected environment at the time of writing, offers two alternatives to management, describes the environmental consequences on the major habitat types for each alternative, and summarizes the consultation and coordination with others throughout the process. The primary distinction between the alternatives concerns the number of grassland acres to be provided. Alternative A would maintain grassland, former croplands and pasture at 200 acres. Alternative B (preferred) proposes to convert 177 acres of that grassland, former croplands and pasture to transitional mixed mesic forest and 23 acres to managed grasslands. Other proposed elements of Alternative B include promoting visitor use to return to historic levels, largely through interpretation and environmental education programming; and enhance biological monitoring efforts in upland and wetlands.

The document can be downloaded at:

<<http://www.fws.gov/northeast/planning/presquile/ccphome.html>>

IV. Pertinent Species and Habitat Within Action Area

- A. Action area (includes all areas to be affected directly or indirectly by the proposed project and not merely the immediate area involved in the action).

**Action area includes the entire refuge (1,329 acres) plus approximately six miles of waters adjacent to the island.**

- B. List of listed species/critical habitat, proposed species/critical habitat, and candidate species known to occur or potentially occurring within the action area. Include species/habitat occurrence on a map (preferably a U.S.G.S. quad.), when known, such that their relationship to the project location can be determined.

**Sensitive joint-vetch (*Aeschynomene virginica*) is a globally-rare (G2) legume which is listed as threatened under the Endangered Species Act of 1973, as amended. The plant community supporting this species has been identified on the refuge. The location of the population is situated in a remote area, over one mile from primary visitor use and proposed habitat changes.**

**The Chesapeake Bay Distinct Population Segment of the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) has been listed as endangered. The James River adjacent to the project area supports this species. This fish species is under NOAA fisheries' jurisdiction.**

Species Common & Scientific Name	Critical Habitat within Action Area (designated/proposed)	Federal Status (endangered/threatened/proposed/candidate)
Sensitive joint-vetch ( <i>Aeschynomene virginica</i> )	No	threatened
Atlantic sturgeon ( <i>Acipenser oxyrinchus oxyrinchus</i> )*	No	endangered



V. Determination of Effects

- A. Explanation of the adverse and beneficial effects of the action on species and/or critical habitat listed above.

**Because the proposed action (Alternative B) promotes increased visitor use to the refuge, motorized boat traffic and on-island foot traffic is anticipated to increase slightly. The growth will be within historic visitation levels and will be concentrated in areas away from species of concern. Enhanced monitoring will provide biological information to help guide further protect these species. Refer to the CCP for a more detailed discussion on the effects to species.**

- B. Explanation of actions to be implemented to reduce adverse effects:

**To protect the Atlantic sturgeon, the refuge will implement best management practices to minimize potential for refuge actions (e.g., trail and facility work) to increase sediment load and deposition in the James River, plant and maintain vegetated riparian areas and natural habitats, and support partner efforts to restore Atlantic sturgeon habitat.**

VI. Effect Determination and ES Response Requested

- A. Listed species/designated critical habitat:

Field Station Determination	Species Name(s)	Ecological Services Response Requested (check one)
No effect	Sensitive joint vetch ( <i>Aeschynomene virginica</i> )	<input checked="" type="checkbox"/> None Needed
Is not likely to adversely affect		<input type="checkbox"/> Concurrence
Is likely to adversely affect		<input type="checkbox"/> Formal Consultation

Field Station Determination	Species Name(s)	Ecological Services Response Requested (check one)
No effect	<u>Atlantic Sturgeon</u> ( <i>Acipenser oxyrinchus oxyrinchus</i> )*	<input checked="" type="checkbox"/> None Needed
Is not likely to adversely affect		<input type="checkbox"/> Concurrence
Is likely to jeopardize		<input type="checkbox"/> Conference

Field Station Determination	Critical Habitat For (list species)	Ecological Services Response Requested (initial/check one)
No effect	N/A	<input type="checkbox"/> None Needed
Is not likely to adversely affect	N/A	<input type="checkbox"/> Concurrence
Is likely to destroy or adversely modify	N/A	<input type="checkbox"/> Conference

B. Proposed species/proposed critical habitat/candidate species: N/A

  
 Project Leader, Eastern VA Rivers NWR Complex
 
  
 Date

VII. Reviewing Ecological Services Field Office Evaluation

- A. Concurrence \_\_\_\_\_ Nonconcurrence \_\_\_\_\_
- B. Formal consultation required \_\_\_\_\_
- C. Conference required \_\_\_\_\_
- D. Informal conference required \_\_\_\_\_

E. Remarks: \* The refuge will coordinate with NOAA fisheries and seek their concurrence on the determination for Atlantic sturgeon. NOAA fisheries has jurisdiction for this species under the Endangered Species Act.

\_\_\_\_\_  
Supervisor, Virginia Field Office

\_\_\_\_\_  
Date

## Appendix F

Meghan Carfoglio/USFWS



*Nature trail bordering the tidal swamp forest*

# **Summary of Public Comments and Service Responses on the Draft Comprehensive Conservation Plan and Environmental Assessment for Presquile National Wildlife Refuge**

## Introduction

In 2012, the U.S. Fish and Wildlife Service (Service, we, our) completed the draft Comprehensive Conservation Plan and Environmental Assessment (draft CCP/EA) for Presquile National Wildlife Refuge (Presquile NWR, the refuge). The draft CCP/EA outlines two alternatives for managing the refuge. Alternative B is identified as the “Service-preferred alternative.”

We released the draft CCP/EA for 37 days of public review and comment from August 2 to September 7, 2012. We held three public open house meetings to present the alternatives evaluated in the draft CCP/EA. On August 7, 2012, we hosted an evening meeting (6 p.m. to 8 p.m.) that was attended by nine people. On August 8, 2012, 13 people attended our afternoon session (2 p.m. to 4 p.m.) and 2 people attended the evening session (6 p.m. to 8 p.m.). We evaluated all the letters and emails sent to us during that comment period, along with comments recorded at our public meeting. This document summarizes all of the substantive comments we received and provides our responses to them.

Based on our analysis in the draft CCP/EA and our evaluation of comments received on that document, we determined that no modifications to the Service-preferred alternative (alternative B) as originally presented in the draft CCP/EA were necessary, and it has been recommended to our Regional Director for implementation as the final CCP. We have determined that publishing a revised or amended draft CCP/EA is not warranted, and we have submitted the final CCP to our Regional Director for approval.

Non-substantive changes we made in the final CCP are:

1. Minor corrections of fact that do not alter the conclusions drawn from their analysis.
2. Minor updates of information to improve readability or clarity.
3. Minor formatting and typographical errors that were brought to our attention.

Our Regional Director will select one of the following for our final CCP:

- Our modified alternative B.
- One of the other alternatives analyzed in the draft CCP/EA.
- A combination of actions from among the alternatives analyzed in the draft CCP/EA.

The Regional Director will also determine whether a Finding of No Significant Impact (FONSI) is justified prior to finalizing the decision. The decision will be made after:

- Reviewing all the comments received on the draft CCP/EA and our responses to those comments.
- Affirming that the CCP actions:
  - \* Support the purpose and need for the CCP
  - \* Support the purposes for which the refuges were established.
  - \* Help fulfill the mission of the National Wildlife Refuge System.
  - \* Comply with all legal and policy mandates.
  - \* Best work toward achieving each refuge’s vision and goals.

At the same time we release an approved final CCP, we will publish a notice of the availability in the Federal Register. That notice will complete the planning phase of the CCP process, and we can begin implementing the plan.

## Summary of Comments Received

After the comment period ended on September 7, 2012, we compiled all of the comments we received, including all letters, emails, and comments recorded at public meetings. In total, we received 19 written responses that included a total of 81 individual comments.

We received a consolidated letter compiled by the Virginia Department of Environmental Quality which included comments from the State agencies and regional planning district commission listed below:

- Chesterfield County
- Richmond Regional Planning District Commission
- Virginia Department of Agriculture and Consumer Services
- Virginia Department of Conservation and Recreation (VDCR)
- Virginia Department of Environmental Quality (VDEQ)
- Virginia Department of Forestry
- Virginia Department of Game and Inland Fisheries (VDGIF)
- Virginia Department of Health (VDH)
- Virginia Department of Historic Resources (VDHR)
- Virginia Marine Resources Commission (VMRC)

We also received comments signed by representatives from the following government agencies and conservation organizations:

- Henrico County Planning Department
- Defenders of Wildlife
- Old Dominion Appalachian Trail Club (ODATC)
- National Park Service, Chesapeake Bay Office

In the discussions below, we address and respond to every substantive comment we received. Substantive comments are those that suggest our analysis is flawed in a specific way. Generally substantive comments:

- Challenge the accuracy of information presented.
- Challenge the adequacy, methodology, or assumptions of the environmental or social analysis and supporting rationale.
- Present new information relevant to the analysis.
- Present reasonable alternatives, including mitigation, other than those presented in the document.

Our discussion does not include responses to any comments we determined to be non-substantive. For example, there were people who wrote us to thank us for hosting the public meetings, tell us that they thought the document was well written, or request copies of the draft CCP/EA.

In order to facilitate our responses, we group similar comments together and organize them by subject heading. Directly beneath each subject heading, you will also see a list of unique letter identification (ID) numbers. Table F.1 at the end of this appendix relates each letter ID number to the name of the individual, agency, or organization that submitted the comment. Responses to multiple, but similar or related comments, are consolidated to reduce duplication and are labeled as “Consolidated Responses.”

In several instances, we refer to specific text in the draft CCP/EA and indicate how the final CCP was changed in response to comments. The full versions of both the draft CCP/EA and the final CCP are available online at: <http://www.fws.gov/northeast/planning/presquile/ccphome.html>. For a CD-ROM or a print copy of either plan, please contact:

Andy Hofmann, Refuge Manager  
Eastern Virginia Rivers National Wildlife Refuge Complex  
336 Wilna Rd.  
P.O. Box 1030  
Warsaw, VA 22572  
Phone: (804) 333-1470  
Email: [EasternVirginiaRiversNWRC@fws.gov](mailto:EasternVirginiaRiversNWRC@fws.gov)

## Service Responses to Comments by Subject

### Planning

#### Document (Clarity, Technical, Editorial, Availability of Document on Web site)

Letter ID#: 16

**Comment:** “Upon review of the demographic data provided in Table 2.4 (page 2-13), Henrico County concurs with the population, median age and population change information; however, based on the County’s land mass of 244 square miles, the population density would equal 1,257 people per square mile.”

**Response:** We appreciate Henrico County’s correction on the population density calculation. We referenced table “G001-GEOGRAPHIC IDENTIFIERS: 2005-2009 American Community Survey 5-Year Estimates” for Henrico County acreage to calculate population density ([http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS\\_09\\_5YR\\_G001&prodType=table](http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_09_5YR_G001&prodType=table)). We have updated the population density in table 3.4 and included a note indicating Henrico County provided the population density value.

Letter ID#: 16

**Comment:** “In the Land Use section on page 2-14, Henrico County wishes to provide clarification on several issues. We do not have existing land use categories of “wetlands, agriculture or forested lands.” For the area within a 5-mile radius of Presquile, the appropriate existing land uses would include the following: Residential (Single Family, Single Family Acreage, and Assisted Living), Commercial, Light Industrial, Open Space-Recreation, Public, Semi-Public, Public Service Corporation, and Vacant.

In the Land Use section on page 2-14, Henrico County wishes to provide clarification on the 2026 Comprehensive Plan future land uses proposed within the area. For the same 5-mile radius, the appropriate future land uses would include the following: Environmental Protection Area, Open Space/Recreation, Prime Agriculture, Rural Residential, Suburban Residential 1, Office, Office/Service, Commercial Concentration, Government and Semi-Public.

Henrico County wishes to clarify the statement that the “lands will remain as prime agriculture, open space/recreation lands, and environmental protection areas.” The 2026 Comprehensive Plan is a long-term guide for the future land use of the county; we cannot guarantee any parcel of land will remain as it is designated in the Plan, as individual property owners may request, and possibly be granted, a rezoning and use different than the current designation.”

**Response:** We appreciate Henrico County’s detailed review of our draft CCP/EA. To address all of these comments, we updated the **Land Use** paragraph in chapter 3 in the final CCP as follows (strikeout indicates text removed; underlined text indicates new text):

#### **Land Use**

Land use surrounding Presquile NWR currently includes industrial lands to the south and southwest in Chesterfield County; largely agricultural and forested lands to the east in Charles City County; and ~~wetland/agricultural to the west and agricultural/light industrial~~ residential (single family, single family acreage and assisted living), commercial, light industrial, open space-recreation, public, semi-public, public service corporation and vacant lands to the north in Henrico County. Future land use projected for Chesterfield County southwest of the refuge retains industrial lands but also includes a proposed “Bermuda Hundred Park” to the west along the James River and another smaller park to the south along the river (<http://www.co.chesterfield.va.us/>; accessed May 2012). Within Charles City County to the east, lands are proposed as conservation areas (<http://co.charles-city.va.us/>; accessed May 2012), while in Henrico County lands to the west and north ~~lands will~~ are projected to remain as environmental protection area, open space/recreation, prime agriculture, rural residential, suburban residential 1, office, office/service, commercial concentration, government, and semi-public (<http://www.co.henrico.va.us/planning/>; accessed ~~May~~ September 2012). It should be noted that future land use projections are subject to change over time.

Letter ID#: 16

**Comment:** “In the Employment section on page 2-14, Henrico County notes Henrico also has a visitors’ center to promote local tourism.”

**Response:** We appreciate Henrico County’s detailed review of our draft CCP/EA. The second paragraph in the **Employment** section of chapter 3 has been updated in the final CCP as follows (strikeout indicates text removed; underlined text indicates new text):

In 2005, Forbes Magazine ranked the Richmond area as one of the best places for business and careers in the U.S., primarily due to its highly educated labor force and relatively low business codes. Other areas of the economy that have developed recently include pharmaceuticals, insurance, advertising, biotechnology, education, tourism, health services, and semi-conductors. In 2009, travel and tourism was the fifth largest industry by nonfarm employment in Virginia, with travelers spending \$17.7 billion (VATC 2010). Visitor centers that promote local tourism occur in Henrico County and in the cities of Richmond, Petersburg, and Hopewell.

Letter ID#: 16

**Comment:** “On page 2-16, Henrico County wishes to point out that Richmond National Battlefield Park is located in Henrico County, instead of southeast of Richmond. Additionally, on page 2-18, in discussing Malvern Hill, the County notes this “best preserved Civil War battlefield in central and southern Virginia” is actually located within Henrico County.”

**Response:** We appreciate Henrico County’s detailed review of our draft CCP/EA. The final paragraph of section 3.8.2 has been updated in the final CCP as follows (strikeout indicates text removed; underlined text indicates new text):

The refuge also contributes indirectly to the economy of Chesterfield County and the Richmond Metropolitan Statistical Area by protecting wildlife habitat, or open space, in perpetuity. ~~Aside from Presquile NWR, other significant public recreational lands in the area include the associated James River NWR (to the east), Richmond National Battlefield Park (southeast of Richmond), Petersburg National Battlefield Park (between Petersburg and Hopewell), and Pocahontas State Park and Resort (south of Richmond).~~ Other significant public recreational lands near Presquile NWR include Federal and State parks in the City of Richmond and Chesterfield, Hanover, Henrico, and Prince George Counties.

## **Purpose and Need**

### **Conservation Plans**

Letter ID#: 9

**Comment:** “If you want increased wildlife habitat, I would refer you to three areas with which you may be familiar. The first is the park at Henricus. Basically it is a swamp and it is a swamp that is uncontrolled. It is what it is and is supported only by the water from rain and the temperatures and weather received during the course of the year. However, come December 1, all kinds of different migratory ducks come through...The point is that this is all in an unmanaged area.

Petersburg National Battlefield is different. It is managed to keep the battlefield itself clean for viewing by tourists. Keep in mind that this area is adjacent to Fort Lee and to Blandford Cemetery on its back side. In the past there have been numerous deer and turkey in that area. At least from what I have seen. The deer come from various areas including some from the cemetery and other areas. They are not hunted and get to grow significantly larger than deer seen in normal areas. I would conjecture in areas that are hunted that the bucks and does seldom get beyond 5 years old...This year the deer population appears to have been reduced. I am not seeing the significant number of fawns and small deer that have been there in the past. This I believe is due to the encroachment of coyotes which pose a significant threat to the newborn and young. In the past there has been a nesting pair of eagles there but I did not attempt to watch that situation this year.

Lastly I would speak about Assateague Island some of which is managed and some of which is not. Depending on when you go you can expect different waterfowl of different types. The water level of the loop is managed to give migratory birds a breeding or feeding area whichever is appropriate...this management area has a lot more room than what you have with Presquile. Only part of it is very actively managed however as I see it. That being the loop and the beach.”

**Response:** As discussed in section 1.4 of the draft CCP/EA, a wide variety of existing national, regional, and local plans and priority guidance documents directly influenced development of the biological resource management objectives in this draft CCP/EA.

## Alternatives

### Alternative B: Focus on Species of Conservation Concern (Service-preferred Alternative)

*Letter ID#: 2, 3, 4, 5, 6, 12, 15, 17*

**Comment:** The Service received eight letters that indicated support for alternative B, the Service-preferred alternative. Among the reasons stated were the focuses on species of conservation concern, that the alternative would provide more and better habitat for birds, and that they were excited about the changes.

**Response:** We appreciate support for our preferred alternative. We have recommended alternative B from the draft CCP/EA for implementation, including all of the actions mentioned in these comments. Chapter 4 in the final CCP details our management direction.

*Letter ID#: 17*

**Comment:** “The Chesapeake Bay Office of the National Park Service has completed its review of the final draft of the Presquile National Wildlife Refuge Comprehensive Conservation Plan (CCP). We compliment the U.S. Fish and Wildlife Service on an excellent document that will guide the future of the refuge over the next 15 years. We are particularly appreciative of the close coordination of this planning process with the recommendations contained in the Comprehensive Management Plan (CMP) for the Captain John Smith Chesapeake National Historic Trail (CAJO). The CAJO CMP recommendations as well as those from the more specific James River CAJO Segment Plan are appropriately recognized and supported in the draft CCP.

Specifically, the plan does the following: recognizes Presquile as an important site along the Smith Trail; includes language acknowledging the partnership between our agencies in the implementation of Trail recommendations and the Chesapeake Bay Gateways Network; recognizes Presquile as both an Indigenous Cultural Landscape and an evocative landscape for the Trail; provides for access opportunities; and includes appropriate interpretive programming and signage. Each of these elements attest to the close relationship between our agencies in working towards goals of mutual interest. We have greatly appreciated this relationship and look forward to working with the U.S. Fish and Wildlife Service in the implementation of the CCP particularly as it relates to the Captain John Smith National Historic Trail.”

**Response:** We appreciate the National Park Service’s support for our preferred alternative and the numerous opportunities to participate in local planning efforts related to the Captain John Smith Chesapeake National Historic Trail in recent years. We look forward continued coordination and collaboration as we progress toward meeting our shared responsibilities to protect natural and cultural resources, while also providing for their enjoyment by present and future generations. We have recommended alternative B from the draft CCP/EA for implementation, including all of the actions mentioned in these comments. Chapter 4 in the final CCP details our management direction.

*Letter ID#: 6*

**Comment:** “Presquile National Wildlife Refuge is a national treasure and I fully support Alternate B and the efforts to not only preserve but to educate.



Too often we see strategic areas such as this fall prey to development or overuse as a recreational facility. Both of these types of uses significantly tax the natural resources and are unwelcoming to the wildlife who so desperately need a wilderness area where they can live in peace. Alternate B offers a wonderful mix of preserving areas for wildlife and allowing visitor access, but for education and conservation purposes, which will further promote the wilderness/wildlife focus of the island. This is an insightful vision and will hopefully become a model for the preservation of other areas, since the need for this type of wilderness environment is critical.”

**Response:** We appreciate support for our preferred alternative. Public uses deemed appropriate and found compatible with the National Wildlife Refuge System mission and refuge’s purpose will be conducted to ensure proper control over these public uses and provide management flexibility should detrimental impact develop. Refer to appendix B of the final CCP for additional details regarding public uses on this refuge.

## **Affected Environment and Impacts**

### **Refuge Physical, Natural, and Biological Resources (General Comments)**

*Letter ID#: 18*

**Comment:** According to the VMRC, the submerged lands of Turkey Island Cutoff are not State-owned bottom, as they were created from uplands in 1934; however, the historic James River channel is State-owned bottom.

**Response:** We appreciate the VMRC’s statements on submerged land ownership. The second paragraph of section 3.10.3 has been updated in the final CCP as follows:

The island portion of the refuge is bounded to the north, east, and west by the line of low water along the right shore of the James River; and on the southwest by the centerline of a 1,000-footwide right-of-way for the Turkey Island Cutoff. The USACE has perpetual rights to excavate, cut away, and remove lands in the Turkey Island Cutoff right-of-way and deposit dredge materials at a designated site on the refuge (labeled Area A on map 3.1). Based on a review of current and historic aerial photography, we have estimated that 12 acres of uplands adjacent to the Cutoff have eroded between 1968 and 2009. Although this erosion seems to be within the 500-footwide USACE easement on the refuge, we are concerned that continued erosion of this bank degrades water quality of the Lower James River and Chesapeake Bay, and threatens archaeological resources and refuge facilities.

*Letter ID#: 18*

**Comment:** “VMRC did not indicate that implementation of the CCP would be inconsistent with the Subaqueous Lands Management enforcement policy, provided appropriate permits are sought and obtained for actions that may require them.”

**Response:** We anticipate continuing to consult with the VMRC regarding subaqueous lands management and permitting, as appropriate.

## **Affected Environment and Impacts**

### **Global Climate Change**

*Letter ID#: 19*

**Comment:** “While Defenders of Wildlife is not able to submit detailed comments on the Draft CCP for Presquile National Wildlife Refuge, I’d like to alert you to a resource that may be helpful in finalizing the plan. Last year, Defenders developed a set of criteria for evaluating how well climate change is incorporated into CCPs. In addition to summarizing our evaluation of several recent final CCPs, the attached document provides the criteria we used. (This fact sheet is also available on our website at [http://www.defenders.org/resources/publications/programs\\_and\\_policy/gw/ccp\\_climate\\_change\\_fact\\_sheet.pdf](http://www.defenders.org/resources/publications/programs_and_policy/gw/ccp_climate_change_fact_sheet.pdf).) As you finalize the plan for Presquile NWR, I hope you’ll refer to these criteria to ensure that climate change is comprehensively considered and addressed.”

**Response:** We thank Defenders of Wildlife for providing the climate change criteria. We used the document to review our draft CCP/EA and feel that we adequately addressed climate change. We also look forward to using the criteria to help improve our climate change analysis in future CCPs.

## **Affected Environment and Impacts**

### **Partnerships (including volunteers)**

*Letter ID#: 3*

**Comment:** “Maybe we can give two heavy work days - will ask Lori Ando.”

**Response:** We appreciate offers of volunteer services and look forward to future collaboration on refuge projects.

*Letter ID#: 6*

**Comment:** “The ODATC has partnered with Cyrus Brame for years and admire him as a strong advocate for the areas he oversees. Under his guidance, we have worked both on and off of Presquile Island performing a multitude of tasks on Cyrus’ never-ending list. Cyrus’ energy and drive are remarkable in his efforts to coordinate volunteer groups to achieve his vision. He is friendly and considerate, finding tasks for people of all abilities. We really value our relationship with Cyrus and the Eastern Virginia Rivers NWR and look forward to continuing this partnership for years to come.”

**Response:** We appreciate affirmations that existing refuge staff have created and maintained a cadre of volunteers that enjoy actively engaging in refuge projects. We appreciate past volunteer services and look forward to future collaboration on refuge projects.

## **Affected Environment and Impacts**

### **Solid Waste Management/Hazmat**

*Letter ID#: 18*

**Comment:** “Any soil that is suspected of contamination or wastes that are generated must be tested and disposed of in accordance with applicable federal, state, and local laws and regulations.

Any structures being demolished, renovated, or removed should be checked for asbestos-containing materials and lead-based paints. Specific state regulatory provisions apply to these activities.”

[V]DEQ encourages all project managers to reduce waste at the source, re-use materials, and recycle all solid wastes. Additional pollution prevention principles should be followed where appropriate.”

**Response:** We appreciate these specific comments related to the protection of the natural and human environment. We will consult with the appropriate State agencies to ensure compliance with applicable Federal, State, and local laws and regulations regarding the creation, handling, storage, and transport of waste and hazardous materials. Presquile NWR is one of the refuges included in the “James River Excess to Asset” program created by the Eastern Virginia Rivers NWR Complex staff and recognized by the U.S. Department of the Interior. The program emphasizes reduction, re-use, and recycling of solid waste materials, with over 23,000 pounds of scrap metal having already been repurposed since its inception. We will continue to ensure protection of the natural and human environment in consultation with the State regarding solid waste generation, handling, and management activities.

## Affected Environment and Impacts

### Air Quality

Letter ID#: 18

**Comment:** “[V]DEQ’s Division of Air Program Coordination ([V]DEQ-DAPC) and its Piedmont Regional Office ([V]DEQ-PRO) recommend that the Service take all necessary precautions, and follow applicable air quality standards, to reduce or avoid emissions of VOC [volatile organic compounds] during any landscape development, especially during periods of high ozone. Permits may be required for any boilers or fuel-burning equipment.

[V]DEQ-DAPC and [V]DEQ-PRO did not object to the Service’s commitments in the FCD [Federal Consistency Determination] to ensure compliance with the Clean Air Act, follow [V]DEQ guidance on construction design and implementation, and consult with state agencies regarding permit requirements.”

**Response:** We appreciate these specific comments related to the protection of the natural and human environment. We will consult with the appropriate State agencies and offices to ensure compliance with applicable Federal, State, and local laws and regulations regarding planning and permitting requirements.

## Affected Environment and Impacts

### Water Resources

Letter ID#: 18

**Comment:** “VDH-ODW [Office of Drinking Water] reiterated its earlier comments (dated December 27, 2011) regarding the Service’s EA on “Enhancement of Overnight Accommodations for the James River Ecology School at Presquile National Wildlife Refuge” (reviewed under DEQ-11-202F, comments mailed January 25, 2012). VDH indicated that the “Overnight Enhancements” project would not be likely to give rise to impacts to public drinking water sources, and specified the following:

- No groundwater wells are within a 1-mile radius of the project site.
- The Virginia American Water Company/Appomattox River surface water intake is located within a 5-mile radius of the proposed project.
- The project does not fall within Zone 2 (greater than 5 miles into the watershed) of any public surface water sources.
- The expected increase in visitation would classify the James River Ecology School as a public waterworks and may require construction of a new well.”

**Response:** We appreciate these specific comments related to the protection of the natural and human environment. We will consult with the appropriate State agencies and offices to ensure compliance with applicable Federal, State, and local laws and regulations regarding planning and permitting requirements.

## Affected Environment and Impacts

### Point Source Pollution

Letter ID#: 18

**Comment:** “[V]DEQ’s Office of Wetlands and Stream Protection does not anticipate that implementation of the Comprehensive Conservation Plan would result in any negative impacts to wetlands, streams, or other water resources. Rather, implementation is likely to result in beneficial effects to water quality because of proper management of the Refuge and its resources.”

**Response:** We appreciate these specific comments related to the protection of the natural and human environment. We will consult with the appropriate State agencies and offices to ensure compliance with applicable Federal, State, and local laws and regulations regarding planning and permitting requirements.

Letter ID#: 18

**Comment:** “[V]DEQ’s Piedmont Regional Office recommends that erosion and sediment controls should be properly implemented and maintained throughout any construction to protect water quality. These controls should be inspected before and after rain events. [V]DEQ also recommends maximizing pervious surface areas and green spaces in the construction design to reduce runoff and the environmental impacts associated with urban runoff.”

**Response:** We appreciate these specific comments related to the protection of the natural and human environment. We will consult with the appropriate State agencies and offices to ensure compliance with applicable Federal, State, and local laws and regulations regarding planning and permitting requirements.

## **Affected Environment and Impacts**

### **Nonpoint Source Pollution**

Letter ID#: 18

**Comment:** “The Service and its authorized agents conducting regulated land-disturbing activities on private and public lands in the State must comply with the Virginia Erosion and Sediment Control Law and Regulations (VESCL&R), Virginia Stormwater Management Law and Regulations including coverage under the general permit for stormwater discharge from construction activities, and other applicable Federal non-point source pollution mandates (e.g., section 313 of the Clean Water Act, Federal Consistency under the Coastal Zone Management Act). Clearing and grading activities, installation of staging areas, parking lots, roads, buildings, utilities, borrow areas, soil stockpiles, and related land-disturbance activities that result in the disturbance of a land area equal to or greater than 2,500 square feet would be regulated by VESCL&R. Accordingly, the Service must prepare and implement an erosion and sediment control (ESC) plan to ensure compliance with state law and regulations. The ESC plan is to be submitted to the DCA Regional Office that serves the area where the project is located for compliance review (see “Regulatory and Coordination Needs,” item 2, below). The applicant is ultimately responsible for achieving project compliance through oversight of on-site contractors, regular field inspection, prompt action against non-compliant sites, and other mechanisms consistent with agency policy. [Reference: Virginia Erosion and Sediment Control Law, Virginia Code §10.1-567.]

The operator or owner of construction activities involving land-disturbing activities equal to or greater than 2,500 square feet in areas designated as subject to the Chesapeake Bay Preservation Area Designation and Management Regulations adopted pursuant to the Chesapeake Bay Preservation Act is required to register for coverage under the General Permit for Discharges of Stormwater from Construction Activities and develop a project-specific stormwater pollution prevention plan (SWPPP). The SWPPP must be prepared prior to submission of the registration statement for coverage under the general permit. It must address water quality and quantity in accordance with the Virginia Stormwater Management Program (VSMP) Permit Regulations. General information and registration forms for the General Permit are available on OCR’s website at <http://www.dcr.virginia.gov/soil> and [water/index.shtml](http://www.dcr.virginia.gov/water/index.shtml) [Reference: Virginia Stormwater Management Law, Virginia Code §10.1-603.1 et seq.; VSMP Permit Regulations, 4 VAC 50 et seq.]”

Also, DCR did not indicate that implementation of the CCP would be inconsistent with the Non-point Source Pollution Control enforcement policy of the Virginia Coastal Program (VCP), provided appropriate authorizations are sought and obtained for actions that may require them.

**Response:** We appreciate these specific comments related to the protection of the natural and human environment. We will consult with the appropriate State agencies and offices to ensure compliance with applicable Federal, State, and local laws and regulations regarding planning and permitting requirements.

### **Affected Environment and Impacts**

#### **Wastewater**

*Letter ID#: 18*

**Comment:** “The CCP would be consistent with the shoreline sanitation enforceable policy provided the Service complies with applicable regulations for on-site septic systems. For clarification of these comments or for additional comments, contact the office of Environmental Health at VDH.”

**Response:** We appreciate these specific comments related to the protection of the natural and human environment. We will comply with applicable Federal, State, and local laws and regulations regarding planning and permitting requirements.

### **Affected Environment and Impacts**

#### **Wetlands**

*Letter ID#: 18*

**Comment:** “[V]DEQ’s OWSP [Overall Water System Plan] does not anticipate that implementation of the Comprehensive Conservation Plan would result in any negative impacts to wetlands, streams, or other water resources. Rather, implementation is likely to result in beneficial effects to water quality because of proper management of the Refuge and its resources.”

**Response:** We appreciate these specific comments related to the protection of the natural and human environment. We will consult with the appropriate State agencies and offices to ensure compliance with applicable Federal, State, and local laws and regulations regarding planning and permitting requirements.

*Letter ID#: 18*

**Comment:** “[V]DEQ’s Piedmont Regional Office recommends that the Service undertake all necessary efforts to protect adjacent wetlands and waterways from adverse effects of activities proposed or undertaken pursuant to the CCP. The Service should obtain all appropriate State and Federal permits from the [Virginia] Department of Environmental Quality, Virginia Marine Resources Commission, and/or Army Corps of Engineers before undertaking activities affecting the local environment (see “Regulatory and Coordination Needs,” item 1, below). The CCP/EA indicates that erosion and sediment controls will be properly implemented and maintained throughout any construction (page 4-10, section 4.4.1).

The Marine Resources Commission (VMRC) indicates that permits may be required from the VMRC, acting as the Chesterfield County Wetlands Board, pursuant to the Tidal Wetlands Act (Virginia Code Chapter 13 of Title 28.2 (sections 28.2-1300 et seq.). Virginia Code section 28.2-1300 defines tidal wetlands as “... lands lying contiguous to mean low water and between mean low water and mean high water ....” The Code defines vegetated wetlands as “... lands lying between and contiguous to mean low water and an elevation above mean low water equal to the factor one and one-half times the mean tide range at the site of the proposed project.”

If wetlands are to be affected by any of the proposed activities, wetlands at the site must be delineated in accordance with the U.S. Army Corps of Engineers' 1987 Wetlands Delineation Manual. The wetland delineation must be approved by the U.S. Army Corps of Engineers. The project must demonstrate compliance with Section 404 (b)(1) guidelines of the Clean Water Act and with the Commonwealth's wetlands mitigation policies. Both Federal and State guidelines recommend avoidance and minimization of wetlands impacts as the first steps in the mitigation process. The unavoidable impacts to State waters may require compensation such as wetland creation, restoration, or other acceptable forms of wetland compensatory mitigation.

Provided all necessary permits are secured prior to land disturbance, [V]DEQ and VMRC would not object to the Service's determination that the CCP would be consistent with the Wetlands Management enforceable policy of the VCP"

**Consolidated Response:** We appreciate these specific comments related to the protection of the natural and human environment. We will consult with the appropriate State agencies and offices to ensure compliance with applicable Federal, State, and local laws and regulations regarding planning and permitting requirements.

## **Affected Environment and Impacts**

### **Historic/Cultural Resources**

*Letter ID#: 18*

**Comment:** "[V]DHR has been in consultation with the Service regarding the CCP and asks that the Service continue to consult directly with [V]DHR. Federal agencies are required by the National Historic Preservation Act to consider the effects of their undertakings on historic properties. See "Regulatory and Coordination Needs," item 3, below."

**Response:** We appreciate these specific comments related to the protection of the natural and human environment. We will consult with the appropriate State agencies and offices to ensure compliance with applicable Federal, State, and local laws and regulations regarding planning and permitting requirements.

*Letter ID#: 18*

**Comment:** "[V]DCR supports the protection and enhancement of the natural heritage resources and associated habitat documented at the Presquile National Wildlife Refuge, as well as the active control of invasive species therein. However, some of the restoration and/or enhancement activities described in the draft CCP may affect natural heritage resources."

**Response:** We appreciate these specific comments related to the protection of the natural and human environment. We would consult with the appropriate State agencies and offices to ensure compliance with applicable Federal, State, and local laws and regulations regarding planning and permitting requirements.

## **Affected Environment and Impacts**

### **Vegetation**

*Letter ID#: 11*

**Comment:** "I think that a reasonable segment of the grassland should be retained as night roosting for woodcock, quail, etc. Woodcock management typically (FWS recommendations) calls for a minimum size grass/old field stand of 5 acres, and obviously more than that could be carved from the 300 acres. Location is not critical in the Presquile case, as a field less than 1/4 mile from daytime habitat is OK (further distance >> predation markedly). I would suggest carving out a 10-acre (or two 5-acre blocks) that have the best chance of remaining without or with less noxious weed infestation (johnsongrass & canada thistle free areas, if such remain). Otherwise, select the less infested areas."

**Response:** We recognize interest in offering habitat for American woodcock and quail. Although quail was not identified as a priority species to be managed at Presquile NWR, American woodcock is among the priority species to be managed at this refuge. We believe that approximately 197 acres of the refuge's existing grassland habitat will contribute to breeding and migrating habitat for birds of conservation concern that use early successional forest habitat while in transition to mature forest during the next 15 years. Birds of conservation concern that are expected to benefit include prairie warbler, field sparrow, American woodcock, and northern bobwhite, as well as to sustain other native plants and wildlife. Additionally, we would begin implementing the strategies identified in the CCP upon approval of the plan, including monitoring and evaluation processes to determine if we are making progress in achieving the refuge's purpose, vision, goals, and objectives. Through adaptive management, evaluation of monitoring and research results may indicate the need to modify refuge objectives or strategies. We will revise the CCP every 15 years thereafter, or earlier, if monitoring and evaluation determine that we need changes to achieve the refuge's purpose, vision, goals, or objectives (602 FW 3).

### **Affected Environment and Impacts**

#### **Transitional Mixed Mesic Forest**

*Letter ID#: 8*

**Comment:** "What I call "Big Woods" or old growth woods are not good for deer in that there is minimal low growth to feed on. Some of the land probably needs to go back to wild wood growth. This would give the low growth needed for game such as deer, and would encourage squirrels, racoons, possum, fox, etc."

**Response:** We recognize interest in providing habitat for deer, squirrels, raccoons, opossum, and foxes. Although none of these species were identified as priority species to be managed at Presquile NWR, we believe that converting 177 acres of grassland through a combination of planting and natural succession to a shrubby transitional mixed mesic forest would increase habitat connectivity between the mature mixed mesic forest and tidal swamp forest habitats of the refuge and provide corridors for travel and movement for certain mammals, namely benefitting the larger mammals which could hide more readily. Increased knowledge and understanding of mammal populations resulting from various surveys and inventories conducted under alternative B will help us better quantify the status and trends of mammals on the refuge.

*Letter ID#: 11*

**Comment:** "By all means, include native shrubs in the mix as you nudge the grassland toward a woody mesic climax. Planted in blocks or thickets, they will have the highest value. I would suggest: indigobush, silky and other shrub dogwoods, arrowwood and other viburnums among the mix. Black gum is an often overlooked tree that has outstanding wildlife value as well as scenic value with it flame red leaves in fall that deserves inclusion in your plantings."

**Response:** As indicated in the plan, we will encourage this succession process and assist it as much as possible by planting native tree and shrub species and controlling invasive species.

*Letter ID#: 2*

**Comment:** "Like the balance of providing grassland for educational area and providing vista for river and converting the rest to forestland."

**Response:** We appreciate support for our preferred alternative. Maintaining a visual connection to the river and historic land uses are important elements of the educational and interpretive programming for refuge visitors.

Letter ID#: 5

**Comment:** “In the past, I supported the idea of grassland on Presquile to help the grassland bird species, and there was a 200-acre area with potential to help species of concern. But with USFWS budget restraints, it is not possible to rid the area of all the invasive plants esp[ecially] Johnson grass. If we had the manpower, then it would be very important to convert this area to grassland. However, current monies do not support this very beneficial idea and therefore, I support the conversion of that area to a landscape with trees.”

**Response:** We appreciate support for our preferred alternative. We also appreciate acknowledgement of our budgetary and staffing constraints related to maintaining 200 acres of native grassland for the benefit of native wildlife.

## Affected Environment and Impacts

### Grassland

Letter ID#: 12

**Comment:** “I am against converting 200 AC of grassland into forest. I feel that the grassland habitat is crucial for species such as Bobwhite and Dickcissel. There is very little of this habitat available.”

**Response:** We appreciate concerns regarding conversion of the refuge’s 200 acres of grassland to forest, as well as general concern about grassland bird habitat availability. As detailed in the draft CCP/EA, the refuge’s 200 acres of grasslands offer only marginal habitat for most grassland birds of conservation concern and we have been unsuccessful in our numerous attempts to improve its quality. We considered improving habitat conditions by converting the introduced, cool season grasses to a mixture of native warm season grasses and forbs. However, we subsequently determined that we do not have the resources to do the required extensive site preparation in the near term, such as multiple herbicide applications, seeding, and mowing to control invasive species and establish native vegetation.

Based on consultation with wildlife experts and our best professional judgment, we have determined that the refuge’s grasslands would continue to benefit migratory bird species (including American woodcock, northern bobwhite, prairie warblers, and field sparrow) as they progress toward transitional mixed mesic forest over the next 10 to 15 years. Other sites within Virginia offer higher quality grasslands that support populations of nesting grassland birds. Among these sites are the artillery impact areas on three military bases (Quantico, Fort A.P. Hill, and Fort Pickett; battlefields at various National Park System units (e.g., Malvern Hill unit of Richmond National Battlefield Park), and agricultural fields of historic plantations (e.g., Shirley, Berkeley) ([http://www.dcr.virginia.gov/natural\\_heritage/grassland.shtml](http://www.dcr.virginia.gov/natural_heritage/grassland.shtml)).

Letter ID#: 8

**Comment:** “I would offer that the area near the viewing tower be kept in grass. The Battlefield lets it grow about 12 to 18 inches high before it cuts it. This area would encourage deer.”

**Response:** We plan to allow natural succession to occur on grasslands for the benefit of priority species whose habitat needs benefit other species of conservation concern that are found around the refuge and in the larger landscape of the lower James River. In particular, we will emphasize habitat for priority birds identified in bird conservation region 30 (such as migratory waterfowl, waterbirds, mature forest dependent birds), as well as other priority refuge resources of concern, including the federally endangered Atlantic sturgeon and federally threatened sensitive joint-vetch. The complete list of priority species for this refuge is listed in appendix A. White-tailed deer are not among the species of concern for this refuge.



Letter ID#: 8

**Comment:** “The southwest area could be in low browse type bushes and plants and would encourage rabbits, deer, and if the bushes had berries a variety of songbirds.”

**Response:** We emphasize the management of specific refuge habitats to support priority refuge species whose habitat needs benefit other species of conservation concern that are found around the refuge and in the larger landscape of the lower James River. The complete list of priority species for this refuge is listed in appendix A, which does include a variety of songbirds. Rabbits and deer are not among the species of concern for this refuge.

## **Affected Environment and Impacts**

### **Invasive Species Control**

Letter ID#: 1 and 11

**Comment:** We received two comments on the herbicide Plateau. One respondent wrote, “Plateau can be used to improve the open “grassland” in the interim as the land reverts “under guidance” to mesic forest.” The second wrote, “I mentioned Plateau as a desirable herbicide that can impact johnsongrass (not sure how canada thistle reacts to it, but the extensive label would tell you), kill fescue (useless for wildlife) and give broomsedge and other desirable natives a chance to emerge/expand. I would consider applying it in strips as you will lose some ground cover. You will have a lot more pollinators in the Plateau-sprayed areas. Speaking of pollinators, a case could be made for not harming the canada thistle as it does have high pollinator usage (don’t tell anyone I said that canada thistle should be encouraged, but this one aspect is true). The other value of Plateau might be an increase in woodland species establishment as some of the sod-bound fescue is opened up. You may wish to use it adjacent to the woody plantings and mature woodland edges to encourage a stair-step field border.”

**Response:** As a general rule regarding herbicide use on refuges, only herbicides approved by the regional contaminants coordinator will be used in accordance with the approved rate and timing of application. Currently, the refuge uses the following chemicals to treat invasive species, when resources allow: Garlon 4, Glypro, and Plateau.

Letter ID#: 1

**Comment:** “Good move to control the ailanthus et al. woody pests.”

**Response:** We appreciate support for our efforts to control invasive plants.

Letter ID#: 11

**Comment:** “Worrying overly about johnsongrass and canada thistle on that island, and in a setting where the ground is going to woodland cover seems senseless. As crown cover, these plants will decline. They are open land species that do not thrive under shade. I can even imagine the environmental instructors pointing out to the students/visitors the mess that such species can create as they show them a dense stand of canada thistle—and if you wage war on them, you have no “teachable moment” to share. And then explain that your m[ana]lg[emen]t. will reduce their vigor over the next few years. Save the \$\$\$ on expensive herbicides.”

**Response:** We appreciate support for our proposed reduction of herbicide applications resulting from a decreased need to control shade-intolerant plant species as the grassland succeeds to forest. We will continue to maintain approximately 46 acres of existing, managed grassland around the administrative and educational complex to provide opportunities to integrate small projects (e.g., a pollinator garden and BayScaping with native plants) into the expanded environmental education programs.

Letter ID#: 11

**Comment:** “I commend you assault on Ailanthus. In the past dozen years nothing has halted or destroyed more intentional wildlife habitat management (or made such undesirable to undertake) in Virginia than Ailanthus. A few trees on a field border will contaminate an entire field as the wind blows on a nice fall day, seeding down a whole field! It is an absolute must to control Ailanthus before undertaking any significant ground disturbance/management. I can show you enough such examples to make you sick. Black locust is a native, and may not deserve quite as significant an effort at control. But eliminating Ailanthus would be VERY desirable!”

**Response:** We appreciate support for our efforts to control invasive plant species.

## **Affected Environment and Impacts**

### **Wildlife**

Letter ID#: 1 and 11

**Comment:** We received two letters on our proposal to allow grasslands to succeed to forest. One respondent wrote, “The grassland conversion will result in a sink for the successional species mentioned. This should be acknowledged as a native for this significant guild.” The second wrote, “It is only honest to admit that the grassland conversion will result in an ecological sink as you attract young forest species into the 300 acres and then, over time, watch that turn to forest. The species that have been attracted will drop out, so claiming attracting/enhancing them is somewhat ingenuous.”

**Response:** Implementation of monitoring and evaluation processes will be initiated upon approval of the plan. We aim to assess progress made toward achieving the refuge’s purpose, vision, goals, and objectives. Through adaptive management, evaluation of monitoring and research results may indicate the need to modify refuge objectives or strategies. We will revise the CCP every 15 years thereafter, or earlier, if monitoring and evaluation determine that we need changes to achieve the refuge’s purpose, vision, goals, or objectives (602 FW 3).

Letter ID#: 18

**Comment:** “[V]DGIF made several recommendations concerning the CCP in its May 29, 2012 correspondence (enclosed). The Service has addressed these in the Draft CCP/EA now under review.”

**Response:** We appreciate that VDGIF verified we adequately addressed comments on the early draft and that VDGIF staff served on our core planning team throughout the process.

Letter ID#: 18

**Comment:** “[V]DGIF recommended that the Service manage for some early successional habitats (approximately 200 acres of grasslands, according to the public meeting presentations; Ellis/Ewing, 8/8/12) at the Refuge that are not considered part of preferred Alternative B. A number of Virginia’s Species of Greatest Conservation Need, as described in Virginia’s Wildlife Action Plan, depend on these habitats for survival. Such habitats appear to be in great decline across the Commonwealth, according to [V]DGIF. However, [V]DGIF indicates that allowing the area to revert to forests through natural succession is not harmful to wildlife.”

**Response:** We appreciate that VDGIF recognizes that allowing natural succession to occur on our 200 acres of marginal quality grasslands is not harmful to wildlife and that grassland habitats are in decline in the Commonwealth. We believe that approximately 197 acres of the refuge's existing grassland habitat will contribute to breeding and migrating habitat for birds of conservation concern that use early successional forest habitat while in transition to mature forest during the next 15 years. Birds of conservation concern that are expected to benefit include prairie warbler, field sparrow, American woodcock, and northern bobwhite, as well as to sustain other native plants and wildlife. Additionally, we would begin implementing the strategies identified in the CCP upon approval of the plan, including monitoring and evaluation processes to determine if we are making progress in achieving the refuge's purpose, vision, goals, and objectives. Through adaptive management, evaluation of monitoring and research results may indicate the need to modify refuge objectives or strategies. We will revise the CCP every 15 years thereafter; or earlier, if monitoring and evaluation determine that we need changes to achieve the refuge's purpose, vision, goals, or objectives (602 FW 3).

*Letter ID#: 18*

**Comment:** "[V]DGIF provided a species list of 506 species under the agency's jurisdiction which should be referred to in updating Appendix A of the CCP/EA. [V]DGIF's recommendations in regard to this listing have been adopted by the Service in its presentation of the species list in appendix A of the Draft CCP/EA."

**Response:** We appreciate that VDGIF verified that we had adequately incorporated that information provided in appendix A of the draft CCP/EA. This list was included as appendix A in the final CCP.

*Letter ID#: 18*

**Comment:** "With regard to protection and management of listed plants and insects, [V]DGIF does not have regulatory authority, and recommends that the Service coordinate with the [Virginia] Department of Conservation and Recreation's Division of Natural Heritage instead."

**Response:** We appreciate these specific comments related to the protection of the natural and human environment. We will consult with the appropriate State agencies to ensure compliance with applicable Federal, State, and local laws and regulations regarding planning and permitting requirements.

*Letter ID#: 8*

**Comment:** "I read the article in the paper today on what the National Wildlife Service wants to do with the island. I am not sure I understand everything I am supposed to understand. If the purpose is to create a wildlife habitat to encourage wildlife's use of the area I don't think either plan really works. Keep in mind that I am not a professional wildlife management person but I do photograph wildlife and know what I see."

**Response:** We encourage public review of our planning documents to gain a better understanding of our planning process and refuge management goals. We consulted with a variety of wildlife experts throughout the planning process; chapter 5 of both the draft CCP/EA and final CCP provide a summary of our coordination and consultation with others. Based on their input and our professional judgment, we concluded that alternative B (the Service-preferred alternative) meets the purpose of the refuge, which is for "use as an inviolate sanctuary, or for any other management purpose, for migratory birds," better than alternative A.

## **Affected Environment and Impacts**

### **Species of Conservation Concern**

*Letter ID#: 8*

**Comment:** "Eagles seem to like large pines where they can build a nest of significant size."

**Response:** Despite the lack of large pine trees on the refuge, eagles have successfully nested on the refuge in other trees.

Letter ID#: 18

**Comment:** “[V]DCR recommends that updated surveys be conducted for rare, threatened, and endangered species and natural communities which may be affected by activities undertaken under the Plan. Surveys for sensitive joint-vetch should be conducted from August 15 to October 15. At this time the plant is in flower or fruit and has attained some stature making it more visible during the surveys, which are typically conducted from a boat. Due to the legal status of the sensitive joint-vetch, [V]DCR also recommends coordination with FWS Virginia Field Office to ensure compliance with protected species legislation.”

**Response:** We appreciate these specific comments related to the protection of the natural and human environment. We will consult with the appropriate agencies and offices to ensure compliance with applicable Federal, State, and local laws and regulations regarding surveys, planning, and permitting requirements. We identified conducting surveys for special status species and natural communities as a strategy of alternative B, under objective 1.2 and to protect freshwater wetland habitats and vegetation in both the draft CCP/EA and final CCP.

Letter ID#: 18

**Comment:** “If applicable, due to the legal status of the bald eagle, [V]DCR recommends coordination with the [Virginia] Department of Game and Inland Fisheries ([V]DGIF), Virginia’s regulatory authority for the management and protection of this species, to ensure compliance with the Virginia Endangered Species Act (Virginia Code sections 29.1-563 through 29.1-570).”

**Response:** We appreciate these specific comments related to the protection of the natural and human environment. We would consult with the appropriate agencies and offices to ensure compliance with applicable Federal, State, and local laws and regulations regarding surveys, planning, and permitting requirements. We detailed our current bald eagle management and interagency coordination efforts in various sections of both the draft CCP/EA and final CCP.

Letter ID#: 18

**Comment:** “Due to the legal status of the Atlantic sturgeon, [V]DCR recommends coordination with FWS Virginia Field Office to ensure compliance with protected species legislation.”

**Response:** We determined that the CCP would have no effect on Atlantic sturgeon and consulted with both our Ecological Services Office and the National Oceanic and Atmospheric Administration. No additional coordination is required under the Endangered Species Act.

Letter ID#: 18

**Comment:** “New and updated information is continually added to [V]DCR’s Biotics Data system. FWS is encouraged to contact [V]DCR for updated information if a significant amount of time passes before the foregoing information is used.”

“The [Virginia] Department of Game and Inland Fisheries ([V]DGIF) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter.”

**Response:** We appreciated being informed of the availability of biotic data and will consult the [V]DCR as warranted.

## **Affected Environment and Impacts**

### **Environmental Education – Student Participation**

*Letter ID#: 3*

**Comment:** “Notify schools (public and private) of new plan. Go slow.”

**Response:** We appreciate support for public outreach efforts. As stated in both the draft CCP/EA and final CCP, we will work closely with the James River Association (JRA) to develop an outreach plan to pique interest from urban and underserved schools that will benefit from programs offered.

*Letter ID#: 8*

**Comment:** “As to lodging for students, I would only consider a lodge for about 40 to 50 students and staff and make sure these are college level students that have the legitimate interest in wildlife management. I don’t know if this makes sense or not but I know VCU [Virginia Commonwealth University] does some work on the James River and if you thought it appropriate, you could have a 10-bed unit for those students and staff that spend a significant amount of time on the river and island devoted specifically to them to assist you and the Wildlife Service in its objectives.”

**Response:** We have been working closely with the JRA to create the Ecology School, a residential environmental education program on the refuge. The Ecology School offers students a welcoming, safe, and accessible environmental education program that incorporates a variety of hands-on opportunities to enjoy, learn about, appreciate, and participate in efforts to conserve America’s wildlife, with a special emphasis on the Chesapeake Bay and the James River watershed. Facilities that support operation of the Ecology School at Presquile NWR include the environmental education center, bunkhouse (construction initiated in summer 2012), tidal swamp forest boardwalk, trail network, observation platform, and boat docks. In 2012, the Service approved a FONSI for the construction of a bunkhouse for overnight stays by the Ecology School participants (USFWS 2012b). The sustainably designed and Americans with Disabilities Act-accessible bunkhouse will offer safe, familiar, comfortable, and dependable shelter for up to 36 people. Construction began in the summer of 2012, and it will be used in accordance with the terms and conditions agreed to by the Service and JRA.

## **Affected Environment and Impacts**

### **Hunting**

*Letter ID#: 7, 12, 15*

**Comment:** We received three general comments on our proposed hunting program. The first commenter wished to see expanded hunting, writing that, “Additional hunting is okay with me, especially of Deer.” The second and third were against hunting. The second stated that they “Disagree with increased hunting days and eliminate any idea of turkey hunting! It would be terrific to have no hunts for any animal.” The third said “I am totally opposed to the shotgun deer massacre planned for the fall...A refuge is not one where deer are slaughtered by 120 hunters. This slaughter needs to be stopped.”

**Response:** We appreciate the diversity of opinions regarding wildlife hunting opportunities on refuges. Hunting was identified in the National Wildlife Refuge System Improvement Act of 1996 as one of the six priority wildlife-dependent public uses of national wildlife refuges. Each of the six priority public uses receives priority consideration in refuge planning and management.

As detailed in both the draft CCP/EA and final CCP, Presquile NWR has been open to public deer hunting since 1967. Past and present refuge management has emphasized that the objectives of the public deer hunting are to maintain the deer population at a level commensurate with the biological carrying capacity of the available refuge habitat and to provide high quality wildlife-dependent recreation. After careful evaluation of public deer hunting on the refuge, the refuge manager has reaffirmed that public deer hunting is compatible with, and does not materially detract from, the purpose and intent of the refuge.

We also considered closing the refuge to public deer hunting in the draft CCP/EA. However, we determined that closing the refuge to public deer hunting does not meet the purpose, need, goals, or objectives of the draft CCP/EA. Additionally, since the refuge was previously opened for public deer hunting as a public use that was accounted for in prior refuge planning documents and policies, closing the refuge to public deer hunting was not carried forward for further analysis.

We acknowledge that additional planning and analysis will be necessary to evaluate potential expansions of the refuge's hunting program. Among the options to be considered are opening the refuge to turkey hunting and offering youth opportunities to participate in deer and/or turkey hunting.

*Letter ID#: 4*

**Comment:** "I'm concerned about adding 2 more days of hunting."

**Response:** We propose to extend the number of hunt days from 3 to 5 annually. Neither the total number of hunters nor bag limits would change as a result of offering hunting on 5 days annually. However, the refuge would be closed to all other public uses on public deer hunting days.

### **Affected Environment and Impacts**

#### **Deer Hunting**

*Letter ID#: 9*

**Comment:** "Not sure about how Presquile Island is set up but I understand the state has offered quota deer hunting on the island for years. So a system is in place."

**Response:** We encourage public review of our planning documents to gain a better understanding of refuge management and services provided. Chapter 3 of the final CCP provides an overview of the existing hunt program.

### **Affected Environment and Impacts**

#### **Fishing**

*Letter ID#: 18*

**Comment:** "In its May 29, 2012 correspondence, [V]DGIF made several recommendations concerning the CCP, and the Service has addressed these in the Draft CCP/EA now under review.

[V]DGIF recommended deleting the earlier reference to a coldwater fishery in the CCP/EA, because there is no coldwater fishery at the Refuge; the adjacent James River is a warmwater fishery. The correction has been made in the version under review (page 4-26, item 4.11)."

**Response:** We appreciate that VDGIF verified that we had adequately incorporated in the draft CCP/EA. These changes have been carried through into the final CCP.

*Letter ID#: 18*

**Comment:** "According to the Department of Health, implementation of the CCP will not affect shellfish growing waters...[V]DGIF, VMRC, and VDH did not object to the Service's determination that the CCP is consistent with the Fisheries Management enforceable policy of the VCP"

**Response:** We appreciate support for our preferred alternative.

## **Affected Environment and Impacts**

### **Non-Motorized Use**

Letter ID#: 14

**Comment:** “I would like to see kayak access permission include access to launch from the ferry dock. The easy answer is that this cannot happen because Presquile doesn’t own the land, but it DOES happen on certain occasions. A nice canoe/kayak dock has been built on Presquile, but what is being done to make it actually of use?”

**Response:** We appreciate interest in non-motorized water access. The Service has an existing, 30-footwide access easement on the mainland, at the Philip Morris USA Park 500 property, located to the south of the refuge. The easement provides the Service and authorized personnel to use an unimproved gravel road and the cable ferry’s mainland terminal to access the refuge. Although closed to the general public, the Service and Philip Morris USA have maintained a good working relationship over the years regarding safety, security, and maintenance of the existing facilities and use of the site as a meeting location for refuge staff, partners, and visitors. We are currently investigating options for improving the refuge’s transportation facilities.

The National Park Service published the “Draft Chesapeake Bay Watershed Public Access Plan” for public review and comment in July 2012. The Public Access Plan identifies specific opportunities for expanding the number of places for people to access the water, including interest in creating a public access sites in the vicinity of Presquile NWR ([http://www.baygateways.net/publicaccess/Public\\_Access\\_Plan\\_v6%20reduced%20size.pdf](http://www.baygateways.net/publicaccess/Public_Access_Plan_v6%20reduced%20size.pdf)).

We anticipate coordinating closely with Philip Morris USA, the National Park Service, and others regarding public use facilities in the refuge vicinity.

## **Attachments and Scope**

### **Virginia Coastal Zone Management Program**

Letter ID#: 18

**Comment:** “Based on our review of the federal consistency determination, dated March 26, 2012 (FCD) (Appendix E of the CCP/EA), and the comments submitted by agencies administering the applicable enforceable policies of the VCP, VDEQ concurs that the CCP is consistent, to the maximum extent practicable, with the Virginia Coastal Zone Management Program (VCP), provided any applicable permits and approvals are obtained as described below. However, other state approvals which may apply to CCP implementation are not included in this consistency concurrence. Therefore, the Service must ensure that the CCP is implemented in accordance with all applicable Federal, State, and local laws and regulations.”

**Response:** We appreciate the VDEQ’s coordination of the Commonwealth’s review of our proposal and guidance to ensure the protection of coastal resources and uses. To ensure consistency with the enforceable policies of the VCP, we will continue to coordinate and consult with Federal, State, and local agencies to acquire all applicable permits and approvals prior to project implementation.

## Attachments and Scope

### Out of Scope

Letter ID#: 9, 10, and 13

**Comment:** We receive the following three comments on waterfowl hunting:

- “We here in VA need to have more spots available to equally enjoy the sport of waterfowling, but we have serious problems with the system of “hunting public water on the eastern side of our state”. Speaking for myself, would recommend it be set up & offered as yet another place the state offered thru our Quota hunting. I realize that you guys don’t have the manpower you once did and that would /could be a problem..... I apply for and hunt Hog Island each year and, while labor intensive for John and his guys, it is well run and provides us with great waterfowling opportunities and everyone has an equal opportunity when we show up at the gate. I also hunt Dutch Gap, which has “blind stakes” and we are allowed to show up and hunt, easy as that....

Also a good system for the waterfowler and seems to require a lot less overall for you guys, may that could be applied here? Tow options and hope the Island is made available to the waterfowling public, but I can only hope it can be enjoyed by all and not just [a] few.”

- “I would like to comment on the Presquile NWR’s draft CCP/EA. I would like to support to possibility of opening the refuge for waterfowl hunting. There is currently limited public access for waterfowl hunters in this area and it would be a great addition to have as a public hunting option in Virginia.”
- “I would like to request that waterfowl hunting be added to the available hunting allowed on Presquile Island. The properties of the NWR end at the water’s edge. Since the NWR is a riparian owner, the refuge could build, or better yet, have a local waterfowl org chapter build riparian blinds in the PUBLIC WATER for the NWR. The blinds would be open to the public on a first come first served or a lottery system similar to Hog Island. The NWR could determine the frequency the blinds could be hunted. Because the blinds would be in the river and not on property they would not be violating the deed of waterfowl hunting on NWR property. Could be a win win. NWR is utilizing another one of their core principles (provide hunting) and hunters have another public spot.”

**Response:** We appreciate the diversity of opinions regarding wildlife hunting opportunities on refuges. Hunting was identified in the National Wildlife Refuge System Improvement Act of 1996 as one of the six priority wildlife-dependent public uses of national wildlife refuges. Each of the six priority public uses receives priority consideration in refuge planning and management.

We updated the first sentence of chapter 3 under the Lands discussion, in section 3.10.3, in the final CCP as follows:

In accordance with Mr. A.D. Williams’ will, the lands donated for “the purpose of conservation, protection, replenishment, and propagation of game birds, game animals, fish and other wildlife” were used to establish Presquile NWR in March 1953.

In support of the refuge’s purpose, the Secretary of the Interior designated certain lands and waters adjacent to Presquile NWR as areas closed to waterfowl hunting on April 22, 1954.



**Table F.1. Letter ID Numbers and Respondents**

<b>Letter ID Number</b>	<b>Name</b>	<b>Organization</b>
1	Steve Capel	
2	Heather Barrar	Chesterfield Planning Department
3	Fran Leckie	
4	Peggy L. Combs	Old Dominion Appalachian Trail Club (ODATC)
5	John M. Roberts	
6	Lori Ando	ODATC Trail Maintenance Chairperson
7	Jean Public	
8	George Gotschalk	
9	Joe Harris	
10	William Coward	
11	Stephen Capel	
12	Paul Bedell	
13	David L. Whipp II	
14	Ann Lankey	
15	Chris Barker	Old Dominion Appalachian Trail
16	R. Joseph Emerson	Henrico County Planning Department
17	Jonathan L. Doherty	National Park Service, Chesapeake Bay Office
18	Ellie L. Irons	Virginia Department of Environmental Quality
19	Julie Kates	Defenders of Wildlife

## Appendix G

Meghan Carfio/National Park Service



*Monarch butterfly*

## **Finding of No Significant Impact (FONSI)**

## **Finding of No Significant Impact Presquile National Wildlife Refuge Comprehensive Conservation Plan**

In August 2012, the U.S. Fish and Wildlife Service (Service, we, our) published the draft Comprehensive Conservation Plan and the Environmental Assessment (CCP/EA) for Presquile National Wildlife Refuge (Presquile NWR, the refuge). The 1,329-acre Presquile NWR is an island in the James River near Hopewell, Virginia, 20 miles southeast of Richmond. It was established in 1953 as “an inviolate sanctuary, or for any other management purpose, for migratory birds.” It is one of many important migratory bird stopover sites along the Atlantic Flyway and provides protected breeding habitat for Federal and State-listed threatened and endangered species, as well as many neotropical migrant bird species. The refuge is comprised of a variety of wildlife habitats, including the open waters of the James River, tidal swamp forest, tidal freshwater marshes, grasslands, mixed mesic forest, and river escarpment. It is one of four refuges that make up the Eastern Virginia Rivers NWR Complex.

Chapter 1 of the draft CCP/EA identifies the purpose of, and need for, a CCP and summarizes the laws, policies, and other mandates we follow in developing the plan. It describes international, national, and regional conservation plans that were used as references, and defines our project analysis area. Chapter 1 also presents the refuge’s purposes, and describes the vision and goals we set for the refuge over the next 15 years. Finally, chapter 1 describes the planning process, including public and partner involvement, and the issues and concerns that are addressed in the plan. Chapter 2 describes the current physical, biological, and socioeconomic environments of the refuge, as well as its surroundings. Chapter 3 describes two proposed management alternatives for the refuge. The alternatives include a detailed description of their respective objectives and strategies designed to help achieve refuge purposes, vision, and goals, and contribute to the mission of the National Wildlife Refuge System (Refuge System). We identified alternative B as the Service-preferred alternative. Chapter 4 carefully considers and evaluates each alternative’s direct, indirect, and cumulative impacts on the environment. Chapter 5 includes a listing of who we consulted and coordinated with during development of the plan, and includes a list of document preparers.

The draft plan’s five appendixes provide additional information supporting the assessment and specific proposals in the Service-preferred alternative. A brief overview of each alternative follows.

### **Management Alternatives**

Alternative A (Current Management): Alternative A satisfies the National Environmental Policy Act of 1969 (NEPA) requirement of a “no action” alternative, which we define as “continuing current management.” It describes our existing management priorities and activities for Presquile NWR, and serves as a baseline for comparing and contrasting alternative B.

We would continue to protect tidal swamp forest and marsh habitats for priority refuge resources of concern, such as the bald eagle, prothonotary warbler, American black duck and other waterfowl, and the federally threatened sensitive joint-vetch. For aquatic resources, we would continue to improve riparian habitat, work with James River Association (JRA) on water quality monitoring, and support efforts by Virginia Commonwealth University (VCU), our Virginia Fisheries Coordinator’s Office, and other partners to restore sustainable, healthy populations of the federally endangered Atlantic sturgeon. We would continue to maintain approximately 200 acres of grassland habitat for breeding and migrating songbirds, as well as continue planting native trees along the southwest border of the refuge and controlling invasive species.

We would continue to protect known cultural resources from degradation from public use, natural processes, and refuge management actions on a limited, as-needed basis.

Our environmental education program would continue to be a combination of on- and off-refuge efforts. We would continue to provide programs for teachers and students and work with local groups. We would continue to work closely with JRA to provide on-refuge environmental education programs for up to 120 students annually. We would also continue to seek opportunities both on and off the refuge where we could promote our environmental education program.

We would continue to support wildlife-dependent recreation on the refuge in designated areas and use a permit system for any visitors not involved with a refuge-sponsored event. Self-guided wildlife observation and photography would continue under that permit system. Our interpretive programs would include conducting several pontoon boat tours around the refuge each year, holding volunteer events, and working with individual groups to provide interpretive programming on a case-by-case basis. We would continue to participate in interpretive events off-refuge in cooperation with partners and local groups, and participate in several civic events each year. We would continue to offer a 3-day fall deer hunt, and the refuge would continue to be closed to waterfowl hunting and fishing.

Alternative B (Habitat Diversity and Focal Species Emphasis): Alternative B is the Service-preferred alternative. It combines the actions we believe would best achieve the refuge's purposes, vision, and goals, and respond to public issues. Under alternative B, we would emphasize the management of specific refuge habitats to support priority species whose habitat needs would benefit other species of conservation concern that are found in the area. Species of conservation concern include migrating waterfowl, waterbirds, and forest-dependent birds, the federally endangered Atlantic sturgeon, and the federally threatened sensitive joint-ventch. We would emphasize maintaining and restoring the integrity of tidal freshwater marsh, tidal swamp forest, the James River and associated backwater habitats, and mature mixed mesic forest habitats through increased monitoring and data collection, and a more aggressive response to habitat changes associated with invasive species, global climate change, or storm events. We would also convert 200 acres of grassland habitat to transitional mixed mesic forest habitat.

We would continue to protect known cultural resources from degradation from public use, natural processes, and refuge management actions through increased efforts to consult with others, including the State Historic Preservation Office (SHPO).

We would continue to support wildlife-dependent recreation on the refuge in designated areas and use a permit system for any visitors not involved with a refuge-sponsored event. This alternative would enhance our visitor services programs by improving opportunities for environmental education and wildlife-dependent recreation. The improvements would include expanding the on-refuge environmental education program through a partnership with JRA and other State and local educators to serve up to 2,000 students annually, building additional partnerships to support increased off-refuge education and interpretive opportunities, and enhancing the quality of our interpretive materials. We would also evaluate opportunities to expand the hunting program to include turkey hunting, a 5-day hunt for deer, and deer or turkey hunting opportunities for youth. The refuge would continue to be closed to waterfowl hunting and fishing. We would also expand our conservation, research, monitoring, and management partnerships to help restore and conserve the refuge.

### **Selection of Management Alternative for the Final CCP**

We distributed the draft CCP/EA for a 37-day period of public review and comment from August 2, 2012, to September 7, 2012. We received 19 written responses representing individuals, organizations, and Federal, State, and local government agencies. Appendix F in the final CCP includes a summary of those comments and our responses to them. After reviewing the proposed management actions, and considering all public comments and our responses to them, we have determined that the analysis in the EA is sufficient to support our findings. We are selecting alternative B, with minor modifications to what was presented in the draft CCP/EA, to implement as the final CCP. Those minor modifications include updating information, making factual corrections that do not alter the conclusions drawn from their analysis, and fixing typographical errors.

We concur that alternative B, with the above changes, and in comparison to the other alternatives, will best:

- Fulfill the mission of the Refuge System.
- Achieve the refuge's purposes, visions, and goals.
- Maintain and, where appropriate, restore the refuge's ecological integrity.
- Address the major issues identified during the planning process.
- Ensure consistency with the principles of sound fish and wildlife management.

Specifically, in comparison to alternative A, alternative B provides the best balance in sustaining or improving the biological integrity, diversity, and environmental health of the refuge in support of Service policy (601 FW 3). These environmental conditions will be enhanced through restoration of native vegetation (e.g., native tree plantings); increased control of invasive plants, allowing poor quality grasslands to succeed to forest, thereby reducing forest fragmentation and creating more interior forest; and working with partners to investigate options for reducing shoreline erosion and sediment deposition in the James River. In addition, increased inventories and monitoring will ensure our management actions are achieving the desired results, including the protection of the federally listed sensitive joint-vetch and Atlantic sturgeon.

Under alternative B, we would increase our efforts to protect cultural resources on the refuge and expand our understanding of the refuge's role in the area's cultural history. We would actively pursue partnership opportunities to improve and promote understanding of Virginia's human history.

Finally, alternative B also offers the best opportunity to enhance and expand recreational opportunities, while still maintaining a diversity of habitats and protecting sensitive wildlife areas from disturbance. Alternative B would expand the refuge's existing environmental education program through our formal partnership with JRA, and expanded partnerships with other State and local educators, to bring an increased number of students to the refuge for environmental education programs. We would promote off-refuge environmental education programs and increase the refuge interpretive program. We would explore the potential to expand our hunt program to include a turkey hunt and deer and/or turkey hunting opportunities for youth hunters.

We have reviewed the predicted beneficial and adverse impacts associated with alternative B that are presented in chapter 4 of the draft CCP/EA, and compared them to the other alternative. We specifically reviewed the context and intensity of those predicted impacts over the short and long term, and considered cumulative effects. Impacts to natural and cultural resources, refuge visitors, and the socioeconomic environment in the refuge vicinity would generally be positive or result in negligible adverse impacts over the long term. Our review of each of the NEPA factors to consider in assessing whether there will be significant environmental effects is summarized here (40 C.F.R. 1508.27).

Beneficial and adverse effects—We expect implementation of management actions detailed in the final CCP will result in beneficial effects and some adverse effects on the natural and human environment as follows.

We anticipate moderate beneficial effects would result from:

- Improved biological integrity, diversity, and environmental health from controlling invasive species, maintaining and restoring refuge tidal freshwater marsh and tidal swamp forest, protecting the refuge shoreline, and expanding mature forest habitat.
- Increased inventorying and monitoring of habitats and species through partnerships with other government agencies, organizations, and academic institutions in order to better inform refuge management strategies.
- Conservation of rare, threatened, and endangered species including the federally endangered Atlantic sturgeon and the federally threatened sensitive joint-vetch.
- Conversion of approximately 200 acres of grassland habitat to mature mixed mesic forest. The transitional habitat that would occur on those acres over the next 10 to 15 years would benefit migratory bird species of conservation concern, such as American woodcock, northern bobwhite, prairie warbler, and field sparrow.
- Enhanced understanding and protection of refuge cultural and historical resources through more effective educational and interpretive programs.
- Expanded, high quality public use opportunities.

We anticipate minor adverse effects from habitat management activities, maintenance of buildings and public use facilities, and from visitors engaged in wildlife-dependent recreation. Most of these effects would be incremental in their impacts, are temporary or short term, and do not represent any major changes to current management. To reduce the likelihood of causing adverse impacts, we would:

Monitor impacts resulting from implementation of the CCP and use adaptive management to adjust management techniques, reevaluate, or refine our habitat management objectives as needed.

- Allow only compatible and appropriate public uses and limit visitors to designated areas and trails.
- Use energy-efficient practices and vehicles, whenever possible.
- Use best management practices for habitat management and the construction and maintenance of facilities.

Given these considerations, there should be no significant impacts on the natural and human environment from the implementation of the final CCP.

Public health and safety—We expect the refuge’s good safety record to continue under the final CCP. Public health and safety is a paramount consideration in designing and implementing all activities on the refuge, whether those activities support habitat or visitor services programs. Adherence to spill prevention plans, pesticide use plans, best management practices, and the protective actions provided in the stipulations of the compatibility determinations for authorized public uses on the refuge, will be a priority. Given these considerations, there should be no significant impact on public health and safety from the implementation of the final CCP.

Unique characteristics of the area—We expect the unique and regionally significant character of the refuge to be maintained under implementation of the final CCP. The unique characteristics of the refuge include the following:

- It is located within and adjacent to coastal counties with special preservation provisions to protect water quality in accordance with the Chesapeake Bay Preservation Act.
- It is located within the Chesapeake Bay Estuarine Complex, a Ramsar wetland of international importance.
- Its 189 acres of tidal freshwater marsh is considered a significant natural vegetation community by the Virginia Natural Heritage Program because of its size and the presence of special status plant species, such as the federally threatened sensitive joint-vetch.
- It is located within a segment of the lower James River that has the potential to be designated as a Virginia Scenic River in the future.
- It is located within an Anadromous Fish Use Area.
- It is located along a segment of the James River that is one of the best places in the Chesapeake Bay Estuary to find the federally endangered Atlantic sturgeon.
- It is an important resting and feeding area for thousands of migrating and wintering waterfowl.
- It is located within the Lower James River Important Bird Area.
- It is located within the summer and winter concentration areas for bald eagles along the James River watershed.

- It has a high potential for preserved significant archaeological resources that date from the Late Archaic period (3,000 to 1,200 B.C.) through the 20th century and could enhance our understanding of Virginia's human history.
- It includes areas that exemplify indigenous cultural landscapes and cultural landscapes that are evocative of early European settlement periods.

We expect that the management actions outlined in the final CCP will continue to protect these unique characteristics. These actions include the following:

- Restore, maintain, and manage forested, grassland, marsh, and aquatic habitats to benefit species of concern.
- Plant and maintain riparian areas and natural habitats.
- Restrict public access to designated areas.
- Work with partners to inventory and monitor habitats and species.
- Work with partners to protect, research, and interpret cultural resources and values.

Given these considerations, there should be no significant impact on the unique characteristics of the area due to implementation of the final CCP.

Highly controversial effects—We do not predict that any highly controversial effects would occur from implementing the final CCP. We have extensive experience protecting rare, threatened, and endangered species; conducting forest and grassland habitat management; controlling invasive plants and pests; controlling deer populations through hunting; and other activities to support wildlife-dependent recreational uses. The effects of these actions are widely known from our past management and monitoring. There is no scientific controversy over what these effects will be. Given these considerations, there is little risk of any unexpected, highly controversial effects on the quality of the human environment.

Highly uncertain effects or unknown risks—We do not predict any highly uncertain effects or unknown risks with implementing the final CCP. The management actions in the final CCP are mostly refinements of existing management that we have used since the refuge was established. However, there is some uncertainty with regard to how climate change will impact refuge resources.

There are many predictions of climate change impacts, but all have a degree of uncertainty. Generally, on a broad scale, it is predicted that the greatest effects of climate change will be on regional air and water temperatures, precipitation patterns, storm intensity, and sea levels, although the degree to which those changes will occur varies among climate change models. Those broad-scale changes are anticipated to influence natural disturbance patterns and result in a decrease in freeze periods, decreased snow cover, increased storm intensities and frequencies, increased intensity and frequency of summer droughts, damaging ozone, and an increase in the spread of invasive species and disease. The resulting effects on wildlife and habitats are expected to be variable and species-specific. There are no site-specific models for the refuge.

We feel the final CCP adheres to the main guiding principal of the Service's climate change adaptation planning which is to establish baseline conditions and monitor changes to those conditions, through the inventory and monitoring strategies we have identified, and by maintaining or increasing the resiliency of the refuge's habitats and ecological processes through forest, aquatic, and shoreline restoration activities. We are also safeguarding against the uncertainty and unpredictability of future climate change effects by using an adaptive management approach.

Despite the potential for some small amount of uncertainty from climate change impacts, we do not find a high degree of uncertainty or unknown risk that the final CCP will cause any significant direct, indirect, or cumulative impact on the environment. This conclusion is based on available data about the impacts of our current management actions, and our use of education, monitoring, expert consultations, outreach, and enforcement to help identify and address any unplanned effects.

Precedent for future actions with significant effects—We developed actions and strategies to support the purpose of the CCP, which is to develop a strategic management plan to best meet the refuge’s purposes and goals, and the Refuge System mission for up to 15 years. The effects of management are designed as gradual improvements over the existing conditions, not global or expansive changes. For example, strategies, such as controlling invasive plants, working with partners to improve water quality in the James River, and allowing natural succession on nearly 200 acres of grassland, provide small incremental gains with impacts that may take several years to realize any benefits. Given these considerations, we do not expect the actions in the final CCP to set a precedent for future actions that may cause any significant impact on the environment.

Cumulatively significant impacts—We do not predict that any cumulatively significant impacts would result from implementing the final CCP based on our NEPA analysis that accompanies the draft CCP/EA. However, since the CCP provides 15-year strategic direction for the refuge, there are actions that provide some cumulative benefits to the region when considered along with other past, present, or reasonably foreseeable future actions on or in the vicinity of the refuge. For example, we plan to continue to coordinate with partners to promote common goals, such as improving water quality in the James River, providing environmental education opportunities, and conducting research. Given these considerations, we do not foresee any of these coordinated activities rising to the level of a significant cumulative effect on the environment.

Effects on scientific, cultural, or historical resources—We have developed actions that would improve our knowledge and understanding of the refuge’s resources through scientific investigations, as well as benefit the refuge’s archaeological, historical, and cultural resources. Goals 1 and 2 list strategies for conducting compatible research, and inventory and monitoring projects in support of refuge goals and objectives. Additionally, goal 3 in the final CCP specifically identifies actions to protect the refuge’s cultural and historical resources. We submitted our plan for review by the SHPO. They responded that our plan adequately characterizes the known and potential for cultural resources on the refuge. The SHPO encouraged us to continue consultation to ensure compliance with section 106 of the National Historic Preservation Act (NHPA) and other cultural resource laws in advance of implementing ground-disturbing activities. Although there would be some risk that visitors could damage or disturb cultural resources on the refuge, these risks would be reduced by limiting public access to designated trails and areas only. We would couple that protection with increased outreach, education, and interpretation of those resources and the importance of conserving them. Given these considerations, we do not anticipate any significant effects on scientific, cultural, or historical resources.

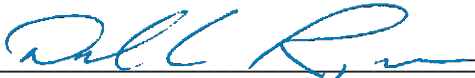
Effects on Endangered Species Act (ESA)-listed species and habitats—We have completed a consultation with our Ecological Services Virginia Field Office under section 7 of the ESA. Their endangered species specialist has concurred that the actions planned in the final CCP are not likely to adversely affect the federally threatened sensitive joint-vetch, which is the only federally listed species on refuge lands. We also consulted with the National Oceanic and Atmospheric Administration (NOAA) regarding the potential to affect the federally endangered Atlantic sturgeon in the James River and concluded that the actions planned in the final CCP will have no effect on Atlantic sturgeon.

We have designed our management activities to benefit and reduce the potential to adversely impact federally listed species. For example, we would protect sensitive joint-vetch by preserving tidal marsh habitat and restricting public access in areas where the plant is known to occur. Also, we would work with NOAA, our Virginia Fisheries Coordinator’s Office, and other partners to maintain and restore the Atlantic sturgeon, including participating in habitat improvements and monitoring of the species. Given these considerations, we do not anticipate any significant effects on these ESA-listed resources.



Threat of violating any environmental law—Our habitat management actions are designed to benefit the environment. They will comply with all applicable laws, such as the Clean Water Act, Clean Air Act, ESA, and the NHPA. We obtained concurrence that the SHPO was satisfied with the draft CCP and strategies to ensure compliance with NHPA as the CCP is implemented. We obtained concurrence that actions detailed in the draft CCP are consistent, to the maximum extent practicable, with the enforceable policies of the Virginia Coastal Management Program regarding the protection of coastal resources and uses, including the Clean Water Act. We consulted with our Ecological Services Virginia Field Office and NOAA to reach our conclusion that implementation of the CCP will have no effect on ESA-listed species or designated critical habitat. Our existing and proposed public hunting opportunities will be consistent with State regulations. Given these considerations, we do not anticipate a threat that the final CCP will violate any environmental law or cause any significant impact on the environment.

Based on this review, we find that implementing alternative B will not have a significant impact on the quality of the human environment in accordance with Section 102(2)(c) of NEPA. Therefore, we have concluded that this Finding of No Significant Impact is appropriate and an Environmental Impact Statement is not required.



Wendi Weber  
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U.S. Fish and Wildlife Service  
Hadley, Massachusetts

OCT 09 2012

Date

Acting

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**October 2012**

