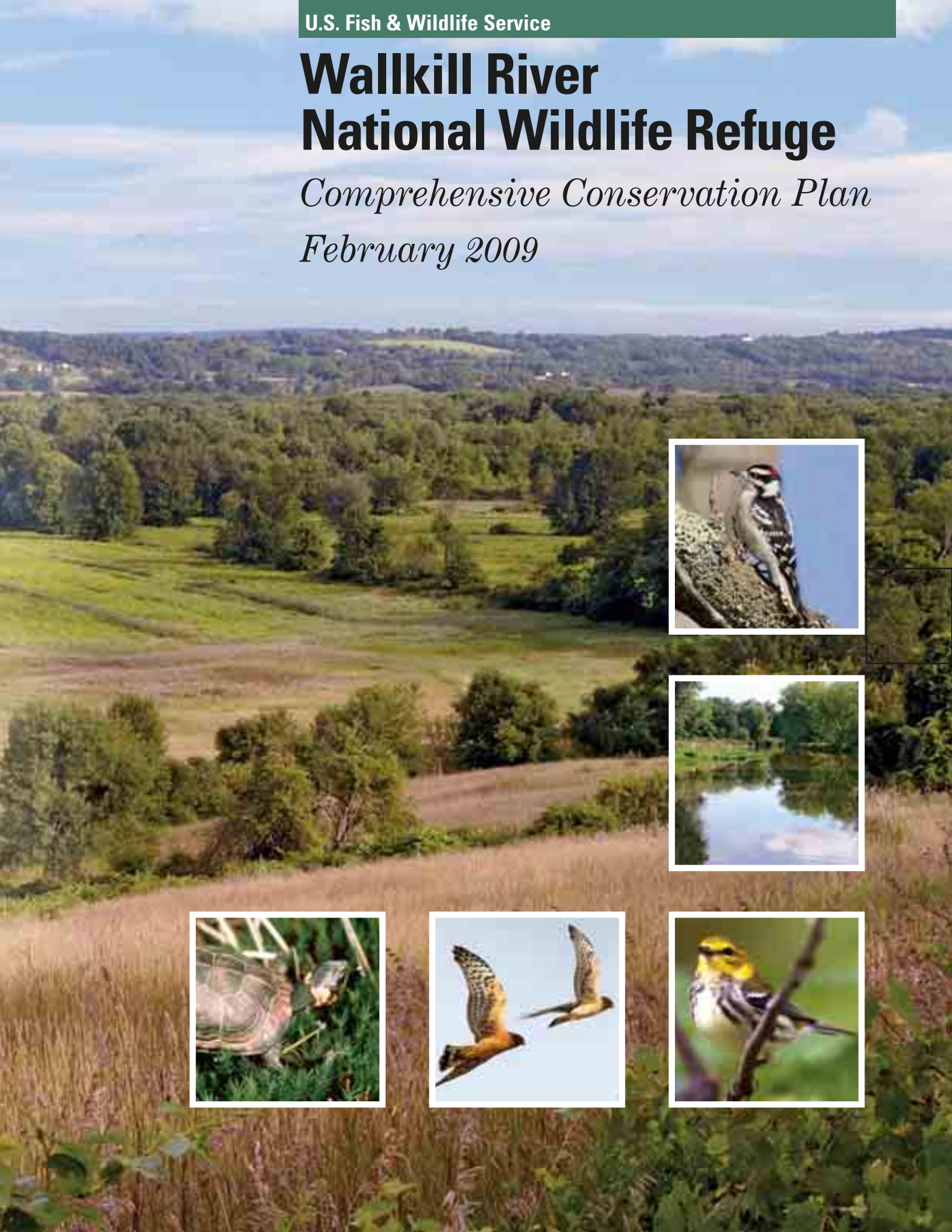


Wallkill River National Wildlife Refuge

Comprehensive Conservation Plan
February 2009





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* 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 97-million acre National Wildlife Refuge System comprised of more than 548 national wildlife refuges and thousands of waterfowl production areas. It also operates 69 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 provide long term guidance for management decisions and set forth goals, objectives, and strategies needed to accomplish refuge purposes and identify the Service’s best estimate of future needs. These plans detail program planning levels that are sometimes substantially above current budget allocations and, as such, are primarily for Service strategic planning and program prioritization purposes. The plans do not constitute a commitment for staffing increases, operational and maintenance increases, or funding for future land acquisition.



U.S. Fish & Wildlife Service

Wallkill River National Wildlife Refuge

Comprehensive Conservation Plan

February 2009

Submitted by:




Edward Henry
Refuge Manager
Wallkill River National Wildlife Refuge

2/9/09

Date

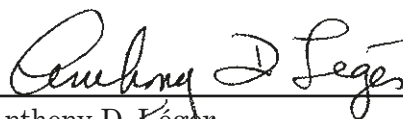
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Janet M. Kennedy
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2/17/09

Date

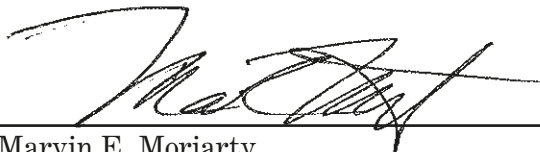


Anthony D. Léger
Regional Chief, Region 5
National Wildlife Refuge System

2/17/2009

Date

Approval by:



Marvin E. Moriarty
Regional Director, Region 5
U.S. Fish and Wildlife Service

2/17/2009

Date



U.S. Fish & Wildlife Service

Wallkill River National Wildlife Refuge

Comprehensive Conservation Plan

February 2009

Refuge Vision Statement

The Wallkill River National Wildlife Refuge promotes the environmental health and works to strengthen the biological diversity of associated habitats within the Wallkill Valley. Through active management, the refuge protects and conserves wetland-dependent species, especially the federally listed bog turtle. We also support protection for state-listed species, migratory birds and regionally rare plant communities.

Local communities realize quality of life benefits as residents and visitors enjoy the refuge's natural beauty and biological diversity. Visitors engage in a variety of wildlife-dependent activities including hunting, fishing, wildlife observation and photography, and environmental education and interpretation. Through these programs, we share the ecological significance of the Wallkill River Valley and the refuge's links with other natural areas.

We value and seek the support of conservation partners and the public as we further acquire and manage exceptional wildlife habitats that contribute to the mission of the National Wildlife Refuge System.

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Wallkill River National Wildlife Refuge

Comprehensive Conservation Plan

February 2009

Abstract

Type of Action:	Administrative
Lead Agency:	U.S. Department of the Interior, Fish and Wildlife Service
Responsible Official:	Marvin Moriarty, Regional Director, Region 5
For Further Information:	Beth Goldstein, Planning Team Leader U.S. Fish and Wildlife Service, Region 5 300 Westgate Center Drive Hadley, MA 01035 (413) 253-8564; northeastplanning@fws.gov

The Wallkill River National Wildlife Refuge was established by Congress in 1990 with a 7,500-acre acquisition boundary stretching from Sussex County, New Jersey in the south to Orange County, New York in the north. This Comprehensive Conservation Plan (CCP) presents our management plans for the refuge over the next 15 years. Its 11 appendixes provide additional information supporting our analysis. Appendix G is a Land Protection Plan that expands the refuge's original acquisition boundary by 9,550 acres. Highlights of the CCP follow.

This plan includes an array of management actions that, in our professional judgment, work best toward achieving the purposes of the refuge, our vision and goals for those lands, and goals in state and regional conservation plans. We recommended alternative B from the draft CCP/EA to our Regional Director as the best alternative for managing this refuge over the next 15 years. He selected it for development into this final CCP.

This document expands the refuge's original acquisition boundary by 9,550 acres, creating a new refuge acquisition boundary of 17,050 acres total. We will acquire new lands from willing sellers through a combination of fee-simple and easement purchase. The expansion area includes four focus areas. The 7,079-acre Papakating Creek Focus Area is the largest, and encompasses a 15-mile tributary of the Wallkill River. All four focus areas have tremendous wetland resource values, and together they form a key corridor connecting preserved habitats on the Kittatinny Ridge to the west and the Hudson Highlands to the east. The expansion area will fully complement and enhance the Federal, State, and private conservation partnerships actively involved in protecting this unique ecosystem.

Also through implementation of this plan, we will allocate more resources toward managing and monitoring federal-listed species that now live or historically lived on the refuge. We will take a more proactive approach to restoring wetlands, and establish a 100-meter forested riparian corridor along either side of the Wallkill River. We will establish three grassland focus areas on the refuge, and let other small fields revert to scrub-shrub habitat.

We will continue our current hunt program on Service-owned lands in New Jersey and also open those lands to bear hunting according to New Jersey State seasons. We will provide at least one additional fishing access site within the original refuge acquisition boundary. We will increase access to Service-owned lands by opening at least two new trails and extending an existing trail, and we will also develop new interpretive materials and work with partners to expand our environmental education programs. Funding and staffing will increase to adequately support program expansions.

Chapter 1

Edward Henry/USFWS



The Wallkill River in spring

The Purpose of and Need for Action

- Introduction
- The Purpose and Need for Action
- Refuge Overview
- The Service, its Policies and Legal Mandates
- Refuge Establishment, Land Acquisition Authorities and Purposes
- Refuge Operational Plans (“Step-Down” Plans)
- Refuge Vision Statement
- Refuge Goals

Introduction

This Comprehensive Conservation Plan (CCP) for the Wallkill River National Wildlife Refuge (refuge) was prepared pursuant to the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. 6688dd, et seq.; Refuge Improvement Act). An Environmental Assessment (EA), required by the National Environmental Policy Act of 1969 (NEPA), was prepared with the draft CCP.

This final CCP presents the combination of management goals, objectives, and strategies that we believe will best achieve our vision for the refuge; contribute to the mission of the National Wildlife Refuge System (Refuge System); achieve refuge purposes; fulfill legal mandates; address key issues; incorporate sound principles of fish and wildlife management, and serve the American public. This CCP will guide management decisions and actions on the refuge over the next 15 years. It will also help us communicate our priorities to the natural resource agencies of the states of New York and New Jersey, our conservation partners, local communities, and the public. As part of this process, we have met our requirements to consult with the adjoining landowners and coordinate with the state wildlife and habitat conservation plans under the NWRSSA, 16 U.S.C. 668dd(e)(3). See appendix I.

This CCP contains 5 chapters and 11 appendixes. Chapter 1, “Purpose of and Need for Action,” sets the stage for chapters 2 through 5. It

- describes the purpose of and need for a CCP
- identifies national and regional mandates and plans that influenced this CCP
- highlights the purposes for which this refuge was established and presents its land acquisition history, and
- presents our vision and goals for the refuge.

Chapter 2, “Planning Process,” describes the planning process we followed, including public and partner involvement in developing this final CCP.

Chapter 3, “Refuge and Resource Description,” describes the existing physical, biological, and human environment.

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

Chapter 5, “List of Preparers,” lists the members of the core planning team and other Service personnel who assisted us.

Eleven appendixes provide additional documentation and information we used in compiling this plan.

The Purpose of and Need for Action

We developed a final CCP for the refuge that, in the Service’s professional judgement, best achieves the purposes, goals, and vision of the refuge and contributes to the National Wildlife Refuge System’s mission, adheres to the Service’s policies and other mandates, addresses identified issues of significance, and incorporates sound principles of fish and wildlife sciences.

NEPA regulations require us to evaluate a reasonable range of alternatives, which we did in the draft CCP/EA. We find that this final CCP, which adopts Alternative B from the draft CCP/EA, best meets the purpose and need for action.

The *purpose* of a CCP is to provide each refuge with strategic management direction for the next 15 years, by

- providing a clear statement of desired future conditions for habitat, wildlife, visitor services, staffing, and facilities
- providing state agencies, refuge neighbors, visitors, and partners with a clear understanding of the reasons for management actions
- ensuring refuge management reflects the purposes of the Wallkill River refuge as well as the policies and goals of the Refuge System and legal mandates
- ensuring the compatibility of current and future public use
- providing long-term continuity and direction for refuge management, and
- providing direction for staffing, operations, maintenance, and annual budget requests.

There are several reasons for why we identify a need for this CCP. First, the Refuge Improvement Act requires us to write a CCP for every national wildlife refuge to help fulfill the mission of the Refuge System.

Second, the refuge's 1993 Station Management Plan is outdated. Since its publication, the refuge land base has more than doubled and management priorities have changed. For example, the northern population of the bog turtle (*Glyptemys [Glyptemys] muhlenbergii*), which inhabits the refuge, was federal-listed as threatened in 1997, and is now a management priority.

Third, we have developed strong partnerships vital for our continued success, and we must convey our vision for the refuge to those partners and the public.

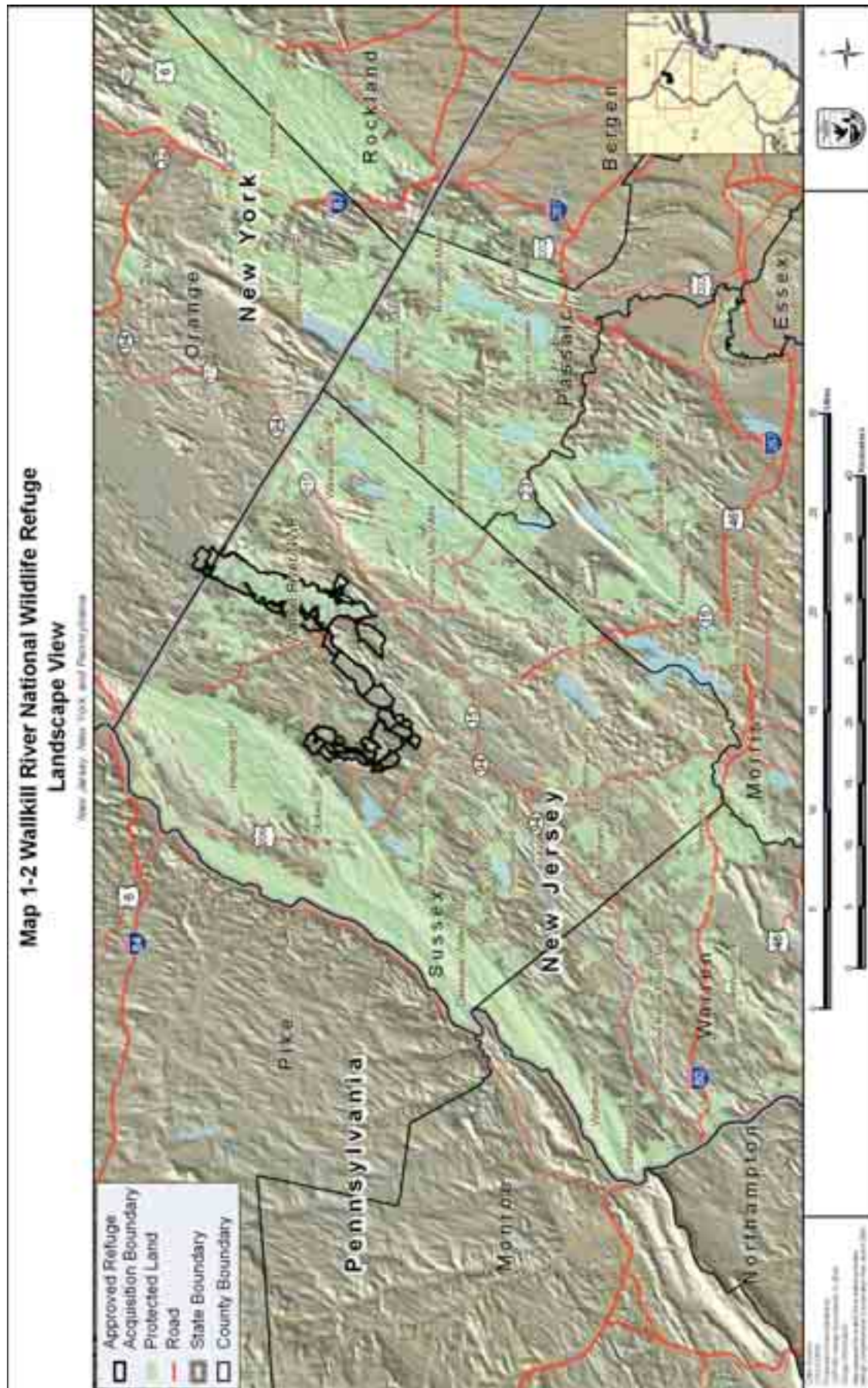
All of these reasons clearly underscore the need for the strategic direction a CCP provides. To help us resolve management issues and public concerns, our planning process incorporates input from natural resource agencies of New York and New Jersey, affected communities, individuals and organizations, our partners and the public.

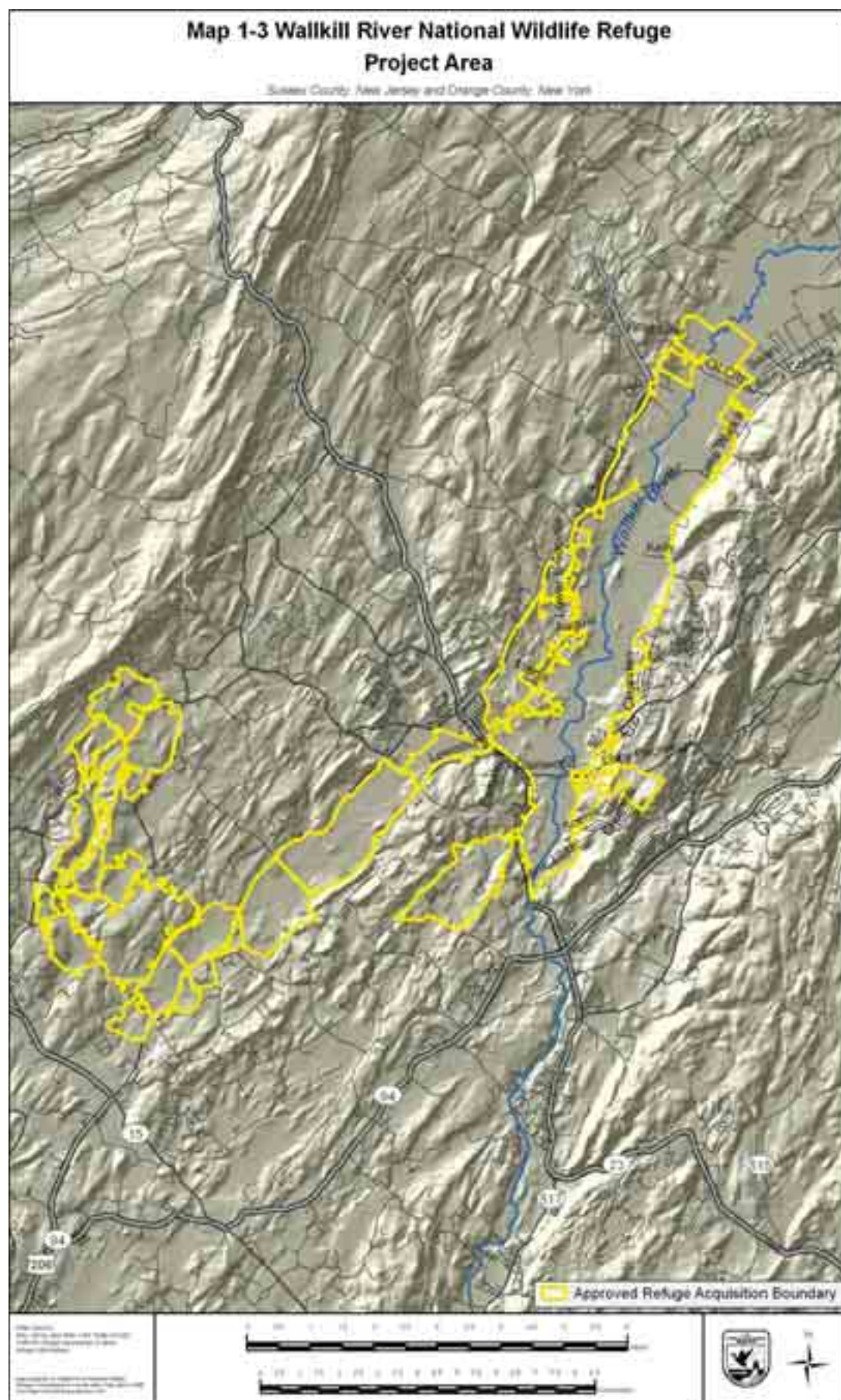
Refuge Overview

The Wallkill River refuge is located approximately 60 miles northwest of New York City, in northeastern Sussex County, N.J. (Wantage, Hardyston, and Vernon), and in southern Orange County, N.Y. (Minisink and Warwick). Map 1-1 illustrates the refuge in relation to the larger Wallkill River watershed. The refuge headquarters is in Vernon Township, New Jersey.

The refuge protects a combination of wetland and upland habitats supporting migratory birds, federal- and state-listed species, and regionally significant wildlife and plant communities in the Wallkill River watershed. Map 1-2 illustrates the refuge which is nestled in the Kittatinny Valley in northwestern New Jersey, between the Kittatinny Shawangunk Ridges to the west and the Hudson Highlands to the east. This valley consists of headwater wetland complexes of riverine habitats, ponds, emergent marshes, fens, scrub-shrub wetlands, wooded swamps, mixed hardwood upland forests, grasslands and farmlands.







The 1990 law (Pub. L 101–593) that created the refuge established a boundary of approximately 7,500 acres spread out across an area that includes the townships of Wantage, Vernon, and Hardyston in Sussex County, N.J., and the Township of Warwick in Orange County, N.Y. Since 1990 we have acquired 5,106 acres within the original acquisition boundary. This final CCP expands the refuge boundary to 17,050 acres reaching into the townships of Wantage, Frankford and Hardyston in New Jersey and Warwick and Minisink in New York (see map 1-3).

The original acquisition boundary encompasses part of the Wallkill River, which flows from Lake Mohawk in Sparta, New Jersey, north to the Hudson River near Kingston, New York, via the Rondout Creek. The newly expanded boundary encompasses the 15-mile Papakating Creek and a portion of Beaver Run—both tributaries of the Wallkill River. It also includes areas to the west and north of the original refuge boundary.

The Shawangunk Grasslands National Wildlife Refuge, a satellite refuge administered by the Wallkill River refuge, is located in Ulster County, New York. In fall 1998, we started one CCP for both refuges. However, we decided in 2002 that separating that plan into two CCPs, one for each refuge, would be more efficient. We completed the CCP for the Shawangunk Grasslands refuge in 2006.

In 2004, we administratively combined the Wallkill River refuge with the Great Swamp National Wildlife Refuge in Basking Ridge, N.J., to reduce costs and manage them more efficiently.

This section highlights the Service, the refuge system, Service policy, and the laws, regulations, and mandates that directly influenced the development of this CCP.

The Service, its Policies and Legal Mandates

The U.S. Fish and Wildlife Service and its Mission

The Service, part of the Department of the Interior, administers the National Wildlife Refuge System. 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 the Service with the conservation and protection of national resources such as migratory birds and fish, Federal-listed endangered or threatened species, inter-jurisdictional fish, and certain marine mammals. The Service also manages national wildlife refuges and national fish hatcheries, enforces federal wildlife laws and international treaties on importing and exporting wildlife, assists with state fish and wildlife programs, and helps other countries develop wildlife conservation programs.

The Service's manual contains the standing and continuing directives to implement its authorities, responsibilities and activities. You can access it at <http://www.fws.gov/directives/direct.html>. We publish special Service directives affecting the rights of citizens or the authorities of other agencies separately in the Code of Federal Regulations; the Service's manual does not duplicate them.

The National Wildlife Refuge System and its Mission and Policies

The Refuge System is the world's largest collection of lands and waters set aside specifically for conserving wildlife and protecting ecosystems. Today, that national network of more than 545 national wildlife refuges encompasses more than 95 million acres in every state and several island territories. Each year, more than 34 million visitors hunt, fish, observe and photograph wildlife, or participate in environmental education or interpretation on refuges.

In 1997, Congress passed the National Wildlife Refuge System Improvement Act. That act establishes a unifying mission for the Refuge System, a new process for determining compatible public use activities on refuges, and the requirement to prepare CCPs for all refuges. It states that first and foremost, the Refuge System must focus on wildlife conservation. It further states that the mission of the Refuge System, coupled with the purpose(s) for which a refuge was established, will provide the principal management direction for 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.” (Refuge Improvement Act; Public Law 105–57)

Soon after, the Service released its mission policy. Among its main points are conserving a diversity of fish, wildlife, plants and a network of their habitats; conserving unique ecosystems within the nation; providing and enhancing opportunities for compatible, wildlife-dependent recreation; and, fostering public understanding and appreciation of those resources.

Fulfilling the Promise

A yearlong process involving teams of Service employees who examined the Refuge System within the framework of Wildlife and Habitat, People and Leadership culminated in “Fulfilling the Promise: The National Wildlife Refuge System,” a vision for the Refuge System. The first-ever Refuge System Conference in Keystone, Colo., in October 1998 was attended by every Refuge Manager in the country, other Service employees, and scores of conservation organizations. Many “Promises Teams” formed to develop strategies for implementing the 42 recommendations of the conference report. Information from such teams as Wildlife and Habitat, Goals and Objectives, Strategic Growth of the Refuge System, Invasive Species, and Inventory and Monitoring helped guide the development of the goals, strategies and actions in this CCP.

Refuge System Planning Policy

This policy establishes the requirements and guidance for Refuge System planning, including CCPs and step-down management plans. It states that we will manage all refuges in accordance with an approved CCP which, when implemented, will achieve refuge purposes; help fulfill the Refuge System mission; maintain and, where appropriate, restore the ecological integrity of each refuge and the Refuge System; help achieve the goals of the National Wilderness Preservation System and the National Wild and Scenic River System; and conform to other mandates [Fish and Wildlife Service Manual (602 FW 1,2,3)].

Appropriate Refuge Uses Policy

This policy provides a national framework and procedure for refuge managers to follow in deciding whether uses are appropriate on a refuge. It also clarifies and expands on the compatibility policy (603 FW 2.10D), and describes when refuge managers should deny a proposed use without determining compatibility. When we find a use is appropriate, we must then determine if the use is compatible before we allow it on a refuge. This policy applies to all proposed and existing uses in the Refuge System only when we have jurisdiction over the use, and does not apply to refuge management activities or situations where reserved rights or legal mandates provide we must allow certain uses (603 FW 1). Appendix B describes the Appropriate Refuge Uses Policy and its relationship to the CCP process. To view the policy and regulations online, visit <http://policy.fws.gov/library/00fr62483.pdf>.

Compatibility Policy

Federal law and Service policy provide the direction and planning framework to protect the Refuge System from incompatible or harmful human activities and ensure that Americans can enjoy its lands and waters. The Refuge System Improvement Act is the key legislation on the management of public uses and compatibility. The act declares that all existing or proposed public uses of a refuge must be compatible with refuge purpose(s). The refuge manager determines compatibility after evaluating an activity's potential impact on refuge resources and ensuring that it supports the Refuge System mission and does not materially detract from, or interfere with, refuge purpose(s). The act also stipulates six wildlife-dependent public uses that are to receive our enhanced consideration in comprehensive conservation planning: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. That Compatibility Rule changed or modified Service regulations in chapter 50, parts 25, 26, and 29 of the Code of Federal Regulations. We may revisit compatibility determinations sooner than the mandatory 15 years if new information reveals unacceptable impacts on refuge purposes. The compatibility determinations for the Wallkill River refuge in appendix B provide additional information on the process.

Maintaining Biological Integrity, Diversity, and Environmental Health Policy

This policy 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 found 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 to restore lost or severely degraded environmental components. It also provides guidelines for dealing with external threats to the biological integrity, diversity, and environmental health of a refuge and its ecosystem (601 FW 3).

Wildlife-Dependent Recreation Policy

The Refuge Improvement Act establishes compatible wildlife dependent recreational uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation) as the priority general public uses of the Refuge System, that are to receive enhanced consideration over other public uses in refuge planning and management. The Wildlife-Dependent Recreation Policy explains how we will provide visitors with opportunities for those priority public uses on units of the Refuge System and how we will facilitate them. We are incorporating that policy as Part 605, chapters 1–7, of the Fish and Wildlife Service Manual.

Other Management Guidance

Although Service and Refuge System policy and each refuge's purpose provide the foundation for its management, the administration of national wildlife refuges conforms to a variety of other federal laws. Those include the Migratory Bird Treaty Act, Endangered Species Act, Wilderness Act, Archaeological Resources Protection Act, and National Historic Protection Act), Executive Orders, treaties, interstate compacts, and regulations pertaining to the conservation and protection of natural and cultural resources. The "Digest of Federal Resource Laws of Interest to the USFWS" lists them online at <http://laws.fws.gov/lawsdigest/index.html>.

Bird Conservation Region 28

The North American Bird Conservation Initiative (NABCI) is a coalition of a great number of government agencies, private organizations, academic organizations, and private industry leaders in Canada, the United States, and Mexico. It formed to address the need for coordinated bird conservation that will benefit "all birds in all habitats." NABCI aims to ensure the long-term health of North America's native bird populations by increasing the effectiveness of both

existing and new bird conservation initiatives, enhancing coordination among them, and fostering greater cooperation among the continent's three national governments and their peoples.

NABCI's approach to bird conservation is regionally based, biologically driven, and landscape-oriented. It draws together the major bird conservation plans already in existence for waterbirds, shorebirds, waterfowl, and landbirds, fills gaps in knowledge, and builds a coalition of groups and agencies to execute the plans.

Bird conservation regions (BCRs) are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues. The Wallkill River refuge lies in BCR 28 (The Appalachian Mountains). That region includes the Blue Ridge, the Ridge and Valley Region, the Cumberland Plateau, the Ohio Hills, and the Allegheny Plateau. Ecologically, this is a transitional area, with forested ridges grading from primarily oak-hickory forests in the south to northern hardwood forests farther north. Pine-oak woodlands and barrens and hemlock ravine forests are also important along ridges, whereas bottomland and riparian forests are important in the valleys, which are now largely cleared for agricultural and urban development. Partners In Flight (PIF) (see below) further breaks down BCR 28 into smaller physiographic regions.

The primary purposes of BCRs, proposed by the mapping team in 1998 and approved in concept by the U.S. Committee in 1999, are to

- facilitate communication among the bird conservation initiatives
- systematically and scientifically apportion the United States into conservation units
- facilitate a regional approach to bird conservation
- promote new, expanded, or restructured partnerships, and
- identify overlapping or conflicting conservation priorities.

As integrated bird conservation progresses in North America, BCRs ultimately should function as the primary units within which issues of biological foundation are resolved, the landscape configuration of sustainable habitats is designed, and priority projects are originated.

North American Waterfowl Management Plan (update 2004)

The goal of 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.”

This updated plan among the United States, Canada, and Mexico outlines their strategy to restore waterfowl populations through habitat protection, restoration, and enhancement. Its implementation will be accomplished at the U.S. regional level in 11 habitat Joint Venture Areas and three species Joint Ventures: arctic goose, black duck, and sea duck. You can access those plans at http://www.nawmp.ca/eng/pub_e.html. We used them as a basis for evaluating waterfowl management opportunities on the refuge.

Joint venture partnerships involve federal, state and provincial governments, tribal nations, local businesses, conservation organizations, and individual citizens who assemble to protect habitat within those areas. The Wallkill River

refuge lies in the Atlantic Coast Joint Venture, one of seven priority focus areas for waterfowl management in New Jersey, including the Wallkill River bottomlands.

Partners In Flight Bird Conservation Plan: Physiographic Area 17, Northern Ridge and Valley

In 1990, Partners in Flight (PIF) was conceived as a voluntary, international coalition of government agencies, conservation organizations, academic institutions, private industry, and other citizens dedicated to reversing the trends of declining bird populations and to “keeping common birds common.” The foundation of PIF’s long-term strategy for bird conservation is a series of scientifically based bird conservation plans, using physiographic provinces as planning units. The Wallkill River refuge lies in the Northern Ridge and Valley Physiographic Province, Bird Conservation Area 17.

The goal of each PIF plan is to ensure the long-term maintenance of healthy populations of native birds, primarily non-game landbirds. For each physiographic area, its plan ranks bird species according to their conservation priority, describes desired habitat conditions, develops biological objectives, and recommends conservation actions. Habitat loss, population trends, and the vulnerability of a species and its habitats to regional and local threats are all factors in that priority ranking. The habitat needs of the top 17 priority species in the PIF Area 17 plan do not form a cohesive habitat type. Instead, those species require a mix of grasslands, shrub-scrub, forested wetlands, non-forested wetlands and forested upland habitats.

You can access the final PIF Area 17 plan at <http://www.partnersinflight.org>. We referred to it as we considered refuge management opportunities.

Region 5 Birds of Conservation Concern (December 2002)

This plan, updated every 5 years by our Division of Migratory Birds, identifies nongame migratory birds that, without conservation action, are likely to become candidates for listing under the Endangered Species Act of 1973. The BCC compiles the highest ranking species of conservation concern from these major nongame bird conservation plans: PIF (species scoring >21), U.S. Shorebird Conservation Plan (species ranking 4 or 5), and North American Waterbird Conservation Plan (species ranking 4 or 5).

We used the BCC list in compiling appendix A, “Species of Conservation Concern,” and in focusing on which species might warrant special management attention.

Regional Wetlands Concept Plan—Emergency Wetlands Resources Act (Emergency Wetlands Resources Act of 1986, 16 U.S.C. 3901(b))

In 1986, Congress enacted the Emergency Wetlands Resources Act to promote the conservation of our nation’s wetlands. The act directs the Department of the Interior to develop a National Wetlands Priority Conservation Plan identifying the location and types of wetlands that should receive priority attention for acquisition by federal and state agencies using appropriations from the Land and Water Conservation Fund.

In 1990, our Northeast Region completed a Regional Wetlands Concept Plan to provide more specific information about wetlands resources in the Northeast. It identifies 850 wetland sites that warrant consideration for acquisition to conserve wetland values in our region. The sites identified in the Wallkill River watershed include the refuge and the rest of the river in Sussex County, Woodruffs Gap Fen, and Hyper Humus Fen, and the Little Cedar Pond in Orange County, N.Y. We used that plan to help us identify areas in need of long-term protection in the watershed and prioritize wetlands habitat management on the refuge.

Edward Henry/USFWS



Wallkill River NWR staff track bog turtle movements via transmitters.

Bog Turtle Northern Population, Recovery Plan (May 2001)

Within the Wallkill River refuge, there is one active bog turtle site on Service-owned land, one active site on private land within the current acquisition boundary, and an estimated 10 suitable sites within the current acquisition boundary, some of which are on Service-owned lands. The northern population of the bog turtle (*Glyptemys [Glyptemys] muhlenbergii*) was federal-listed as a threatened species in November 1997. The overall objective for the recovery plan is to protect and maintain existing populations of this species and its habitat, enabling its eventual removal from the federal list of endangered and threatened wildlife and plants. Five bog turtle recovery units and their subunits are identified. The refuge lies in the Hudson River/Housatonic Unit, Wallkill River Watershed Subunit.

Four recovery criteria set the threshold for determining when the recovery objective has been met. Those relate to population and habitat goals, monitoring programs, illicit trade, and habitat management. One criterion for the Wallkill River Watershed Subunit is to protect at least 10 viable bog turtle populations and sufficient habitat to ensure they can be sustained.

In addition to listing goals and criteria and describing bog turtle ecology and life history, the Recovery Plan identifies 10 specific recovery tasks. Those are specific actions that, when fully implemented, should lead to meeting the recovery objective. The refuge staff will contribute to the following recovery tasks on the refuge, within their authority and in cooperation with the recovery team.

- Protect known, extant populations/habitat using existing regulations.
- Secure the long-term protection of bog turtle populations.
- Conduct surveys of known, historical, and potential bog turtle habitat.
- Investigate the genetic variability of the bog turtle throughout its range.
- Reintroduce bog turtles into areas from which they have been extirpated or removed.
- Manage and maintain bog turtle habitat to ensure its continuing suitability for bog turtles.
- Conduct an effective law enforcement program to halt illicit take and commercialization of bog turtles.
- Develop and implement an effective outreach and education program about bog turtles.

The refuge staff worked with our New Jersey Field Office to conduct an intra-Service Section 7 consultation on all actions related to bog turtles. The Section 7 consultation is attached to this final CCP as appendix H.

Recovery Plan for Mitchell's Satyr Butterfly (USFWS 1998)

The Service listed the Mitchell's satyr butterfly (*Neonympha mitchellii mitchellii*) as an endangered species in 1992. Most of its current and historic population sites are clustered in southern Michigan and adjacent northern Indiana, but some isolated populations historically were present in northern New Jersey. Two well-known sites in Sussex and Warren counties recently supported the species. The confirmed sites are both fens located in areas of limestone

bedrock in the same watershed, similar to habitats used by the federal-listed threatened bog turtle.

The recovery plan goal for New Jersey is to establish one metapopulation in that state. Because the refuge is located in Sussex County, where extant populations of the butterfly were found, we will follow the actions recommended in the recovery plan to try to meet the goal for New Jersey.

Dwarf Wedgemussel Recovery Plan (USFWS 1993)

The dwarf wedgemussel (*Alasmodonta heterodon*) was federal-listed as an endangered species in March 1990. Its Recovery Plan identifies this goal: “maintain and restore viable populations to a significant portion of its historical range in order to remove the species from the Federal list of threatened and endangered species.” It also identifies two recovery objectives: (1) down-list to threatened status; and, (2) delist.

The Wallkill River refuge includes potential habitat for the dwarf wedgemussel. Our New Jersey Field Office started surveys of the Wallkill River in August 2000, but found no mussels. Additional surveys are needed to fully determine their presence, absence, or the possibilities for their introduction. One of the mussel’s host fish, the tessellated darter (*Etheostoma olmstedii*), was observed during the 2000 survey.

Besides listing goals and objectives and describing mussel ecology and life history, the Recovery Plan identifies specific, major recovery tasks. The refuge staff will contribute to the following recovery tasks, within their authority and in cooperation with the recovery team:

- Collect baseline data needed for the protection of *Alasmodonta heterodon* populations;
- Encourage the protection of the species through the development of an educational awareness program; and
- Determine the feasibility of re-establishing populations within the species’ historic range and, if feasible, introduce the species into those areas.

Recovery Plan for the Indiana Bat (USFWS 2007)

In 1967, the federal government listed the Indiana bat (*Myotis sodalis*) as endangered because of declines in its numbers documented at its seven major hibernacula in the Midwest. At the time of its listing, the population numbered around 883,300. Surveys in 2005 numbered the population at 457,374. Although that number is down by about half, surveys in most states’ hibernacula indicate that populations increased or at least remained stable in 2004 and 2005, resulting in a 16.7-percent increase over estimates in 2003. The 2005 population number is almost at the level of bat populations in 1990. However, surveyors lacked an estimated confidence interval when the 2005 population numbers were released, and some changes in methodology occurred between 2003 and 2005.

The refuge first conducted mist net surveys for Indiana bats in August 2008. Surveyors found three Indiana bats, including one post-lactating female and one juvenile, which indicates the presence of a maternity colony nearby. The refuge had previously suspected the presence of Indiana bats, in part because they have been documented in several nearby locations. A maternity colony was found in the summer of 2007 in Wantage, about 2.25 to 4 miles from refuge lands; and since the mid-1990s, Indiana bats have been known to hibernate in three areas near Hibernia, N.J., about 20 miles south of the Wallkill River

refuge. Also, the bats' summer focus area—where bats could potentially occur between April 1 and September 30—includes the entire refuge. Furthermore, the refuge provides riparian, forested and upland habitat types typically used by Indiana bats in summer for roosting and foraging.

Recovery Plan for the Small-Whorled Pogonia (USFWS 1992)

The small-whorled pogonia (*Isotria medeoloides*), a member of the orchid family, is a sparse but widely distributed plant. Its primary range extended from southern Maine and New Hampshire through the Atlantic Seaboard states to northern Georgia and southern Tennessee. Listed as endangered in 1982, it was reclassified as threatened in 1994. The plant occurs in upland sites in mixed-deciduous or mixed-deciduous coniferous forests in second- or third-growth successional stages.

Two confirmed extant sites of the plant are in New Jersey, both in Sussex County, where the refuge is located. The long-term goal for the species is to delist it by ensuring its long-term viability. The actions needed for delisting include

- Protect known populations.
- Manage protected habitats.
- Monitor existing populations.
- Conduct surveys for new populations.
- Investigate population dynamics.
- Investigate species biology.
- Provide public information and education.

State of New Jersey Wildlife Action Plan (New Jersey 2007)

In 2005, state fish and wildlife agencies were required to develop Comprehensive Wildlife Conservation Strategies focusing on “species of greatest conservation need” to be eligible for funds from the State Wildlife Grant program. That program provides federal funds to states for conservation efforts aimed at preventing fish and wildlife populations from declining, reducing the potential for listing those species as endangered.

The New Jersey Wildlife Action Plan (WAP) was revised several times: the latest in 2007. The WAP divides the state into four physiographic provinces and then further into five landscape regions. The refuge is located in the landscape region known as the Skylands, which includes the Valley and Ridge Province, where the Wallkill River refuge lies. In identifying species of greatest conservation need, the WAP incorporates priorities from all national plans, including PIF, North American Landbird Conservation Plan, the U.S. Shorebird Conservation Plan, the North American Waterfowl Management Plan, the USFWS species of conservation concern plan, and various recovery plans for federal-listed threatened and endangered species. The Indiana bat, bog turtle, dwarf wedgemussel and Mitchell's satyr butterfly all are identified as wildlife of greatest conservation need in the Skylands landscape region. Although the bog turtle and Indiana bat are the only listed species known to live on the refuge, the Valley and Ridge Province is home to current or historic occurrences of the other two species. Therefore, our proposed action in the CCP contains objectives and strategies that relate directly to those four species.

New York State Comprehensive Wildlife Conservation Strategy (New York 2006)

We also used New York's Comprehensive Wildlife Conservation Strategy (CWCS 2006) as part of this CCP process. The part of the Wallkill River refuge in New York lies in the Lower Hudson River watershed basin, which covers all or part of 20 counties and about 7.5 million acres (11,700 square miles). Major water bodies include the Ashokan Reservoir, Esopus Creek, Rondout Creek, and Wallkill River. The Catskill Mountains and Hudson River Valley dominate the landscape.

This watershed basin contains many of the same habitat types as the New Jersey Skylands region. The forested habitats include the Shawangunks, south of the Catskills and west of the Hudson River, which contain a forest matrix of chestnut-oak forest (chestnut oak, red oak), hemlock, northern hardwood forest and pitch pine-oak heath rocky summit interspersed with vernal pools and wetland habitat. The forested habitats are important migratory corridors for raptors and other migratory birds. The lower Hudson River Valley, where the northern portion of the current refuge boundary lies, is a hotspot for amphibian and reptilian biodiversity in New York State. This area contains high-quality habitat for wetland-dependent species and some of the best bog turtle habitat in the Hudson River Valley. Important habitats include red maple-hardwood swamp, floodplain forest, fens, and shallow emergent marsh. The Upper Hudson River Basin contains natural and human-created (e.g., pasture, hay land) grassland habitats that support grassland species of conservation concern, including the upland sandpiper, vesper sparrow, and grasshopper sparrow. Shrub-dominated fields in agricultural landscapes are important for rare shrubland-nesting birds.

The New York CSWS names the Indiana bat, bog turtle and dwarf wedgemussel as three of its species of greatest conservation need. We used the information about important habitats and species in New York to help us form objectives and strategies for the CCP.

The Landscape Project, New Jersey Endangered and Nongame Species Program, New Jersey Department of Environmental Protection (Niles et.al., 2004)

In 1994, the New Jersey Division of Fish, Game and Wildlife Endangered and Nongame Species Program (ENSP) adopted a landscape-level approach to rare species protection. The goal is to protect New Jersey's biological diversity by maintaining and enhancing rare wildlife populations in healthy, functioning ecosystems. Five landscape regions have been identified: The Wallkill River refuge lies within the Skylands Region. Using an extensive database that combines information on rare species locations with land cover data, the ENSP has identified and mapped areas of critical habitat for rare species (state- or federal-listed threatened or endangered species) in each landscape region. Critical areas are ranked by priority. A GIS database provides baseline information to conservation partners to help in prioritizing habitat protection, open space acquisition, and land management planning. We used that information in our land protection planning.

Sussex County Strategic Growth Plan and Sussex County Open Space Plan

The Sussex County New Jersey Board of Chosen Freeholders received a grant in 1999 from the New Jersey Department of Community Affairs to develop an alternative to the "State Plan" that provides guidance for the county's growth, using "smart growth" principles. The 1999 Sussex County Strategic Growth Plan, available at <http://www.sussex.nj.us/documents/planning/6%20sgp.pdf>, identifies areas suitable for development and those with environmental constraints throughout the county. It also provides recommendations on open space acquisition, zoning, and land use practices to protect sensitive natural areas while promoting economic development.

Wallkill River in winter.



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The Sussex County Open Space Plan provides specific criteria for the protection of open space at the municipal and county level, and considers the location and purpose of state-, federal-, and non-profit-protected lands in the county. The refuge is an active partner in the development and implementation of both plans.

Wallkill River Watershed Management Program

The Sussex County Municipal Utilities Authority, in concert with a Public Advisory Committee, is responsible for conducting the Wallkill River Watershed Management Program. Included in that program is the collection and interpretation of water quality data through a sampling plan that leads to recommendations for ensuring that the quality of the Wallkill River is maintained or improved. The refuge is an active partner in that process; the refuge staff participates in the Land Use Committee and the Open Space sub-committee.

Refuge Establishment, Land Acquisition Authorities and Purposes

Wallkill River Refuge Establishing Legislation

Refuges can be established by Congress through a special legislation, by the President through an executive order, or by the Director of the Service through an administrative decision document. Wallkill River refuge was first established by the Director in an administrative decision document on March 9, 1990. Congress later enacted Public Law No. 101-593, 104 Stat. 2955 on November 16, 1990, to confirm the establishment of the 7,500-acre refuge along a 9-mile stretch of the Wallkill River by special legislation. For the expansion of the refuge's land acquisition boundary the Director will issue a new administrative decision document.

Once the acquisition boundary is established, the Service can acquire lands under a variety of statutory authorities; see Refuge Manual 3 RM 1.3. To date, the Service has acquired lands for the Wallkill River refuge under the following authorities:

- 1) Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
- 2) Migratory Bird Conservation Act [16 U.S.C. 715d]
- 3) Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could also be acquired under several other statutory authorities, including but not limited to:

- 1) Refuge Recreation Act [16 U.S.C. 460K-1]
- 2) Endangered Species Act [16 U.S.C. 1534]
- 3) National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

Wallkill River Refuge Purposes

The refuge was established with these purposes: (1) to preserve and enhance the refuge's lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to conserve and enhance populations of fish, wildlife, and plants within the refuge, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and, (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation (104 Stat. 2955).

Refuge Operational ("Step-Down" Plans)

The U.S. Fish and Wildlife Service Manual, Part 602, Chapter 4, "Refuge Planning Policy," lists more than 25 step-down management plans that generally are required on refuges. Those plans "step down" general goals and objectives to specific strategies and implementation schedules. Some require annual revisions; we revise others 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 are complete and up-to-date.

- Hunt Plan (reviewed annually)
- Sport Fishing Plan (reviewed annually)
- Fire Management Plan
- Zebra Mussel Control Plan
- Safety Plan
- Continuity of Operations Plan
- Chronic Wasting Disease Plan
- Hurricane Plan
- Avian Influenza Response Plan
- Nexus Statement (Law Enforcement area of jurisdiction)

Unless otherwise noted, these plans are to be completed for the Wallkill River refuge.

- Mosquito Management Plan (the highest priority for completion)
- Habitat Management Plan (the second priority for completion)
- Visitor Services Plan

- Inventory and Monitoring Plan
- Law Enforcement Plan
- Integrated Pest Management Plan (including an annual furbearer management program plan)
- Facilities Plan
- Sign Plan

In 1997, we completed and approved an environmental assessment for the Visitor Services Program on the Wallkill River refuge. However, we did not complete a final Visitor Services Plan because of Regional Office guidance pending on developing consistency in those plans. The regional guidance was never issued. The start of the CCP process further delayed the completion of the Visitor Services plan. This CCP provides strategic guidance for visitor services programs on the refuge; we will develop a Visitor Services Plan when a visitor services specialist is on staff.

Refuge Vision Statement

Early in the planning process, our team developed the following vision statement to provide a guiding philosophy and sense of purpose for our planning.

The Wallkill River National Wildlife Refuge promotes the environmental health and works to strengthen the biological diversity of associated habitats within the Wallkill Valley. Through active management, the refuge protects and conserves wetland-dependent species, especially the federally listed bog turtle. We also support protection for state-listed species, migratory birds and regionally rare plant communities.

Local communities realize quality of life benefits as residents and visitors enjoy the refuge's natural beauty and biological diversity. Visitors engage in a variety of wildlife dependent activities including hunting, fishing, wildlife observation and photography, and environmental education and interpretation. Through these programs, we share the ecological significance of the Wallkill River Valley and the refuge's links with other natural areas.

We value and seek the support of conservation partners and the public as we further acquire and manage exceptional wildlife habitats that contribute to the mission of the National Wildlife Refuge System.

Refuge Goals

Our planning team developed the following goals for the refuge after a review of legal and policy guidelines, the Service mission, regional plans, refuge purposes, our vision for the refuge, and public comments. All of these goals fully conform to and support national and regional mandates and policies.

- 1) Protect and enhance habitats for federal trust species and other species of special management concern, with particular emphasis on migratory birds and bog turtles.
- 2) Promote actions that contribute to a healthier Wallkill River.
- 3) Increase or improve opportunities for hunting, fishing, environmental education, interpretation, wildlife observation and wildlife photography.
- 4) Cultivate an informed and conservation-educated public that works to support the refuge purposes and the National Wildlife Refuge System mission.

Chapter 2



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Refuge visitors canoe the Wall River in springtime.

Planning Process

- The Comprehensive Conservation Planning Process
- Issues and Opportunities
- Plan Amendment and Revision

The Comprehensive Conservation Planning Process

Planning Process

Service policy establishes an eight-step planning process that also facilitates compliance with NEPA (see figure 2.1, below). Although that figure suggests those steps are discrete, two or three steps can happen at the same time. Each of the eight steps is described in detail in the planning policy and CCP training materials.

We began combined planning for both the Wallkill River and Shawangunk Grasslands refuges in late fall 1998. In February 1999, our planning team met for the first time. Service employees from the refuge, our Northeast Region office, our Ecological Services field offices, and employees of state agencies attended.



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The CCP planning process involves endangered species, their habitats, and people.

Our early meetings consisted of getting acquainted with the planning process and collecting information on natural resources and public use. We identified preliminary issues and management concerns, and developed refuge vision statements and preliminary goals. Figure 2.1 describes the steps of the planning process and how it integrates NEPA compliance. We also compiled a mailing list of about 3,000 names, including state agencies, organizations, elected officials, individuals, and adjacent landowners, to ensure that we would be contacting a diverse sample of interested groups as planning progressed.

In May 1999, we developed issues workbooks to solicit written comments on topics related to the management of the refuges. We recognized that not everyone could attend our Open House meetings planned later in May and in June, so the issues workbooks provided opportunities to reach a larger audience. We sent them to everyone on our mailing list, distributed them at refuge headquarters, and offered them every time refuge staff participated in a public function. We received 337 completed workbooks. The responses on protecting resources and providing public use strongly influenced our development of issues and alternatives in the draft CCP/EA.

In May and June 1999, we held seven Open Houses: two in Sparta, N.J.; two in Vernon, N.J.; two in Wallkill, N.Y.; and, one in Warwick, N.Y. We advertised locally in news releases, radio broadcasts, and in notices to our mailing list. More than 50 people attended. We also organized several meetings with conservation partners and state agencies to share information about specific issues.

In October 1999, we released a “Fall 1999 Planning Update” to everyone on our mailing list. That update summarized the public comments we had received from meetings and issues workbooks, identified the key issues we would be dealing with in the CCP, and shared our revised refuge vision statement and goals.

Once we had finalized the key issues in October, we began to develop alternative strategies for addressing and resolving each one. We derived the fully developed management alternatives in the draft CCP from those strategies, public comments, and refuge purposes and goals. In 2000, we held follow-up meetings with conservation partners, state agencies, and the public to share our proposed alternatives. Appendix I, “Consultation and Coordination with Others,” provides a detailed summary of each public involvement activity. In January 2002, we released our “Winter 2002 Planning Update” to our mailing list. That update included a matrix highlighting our draft alternatives. Later that year, we determined that separating our planning for Wallkill River and Shawangunk Grasslands refuges would be more efficient.

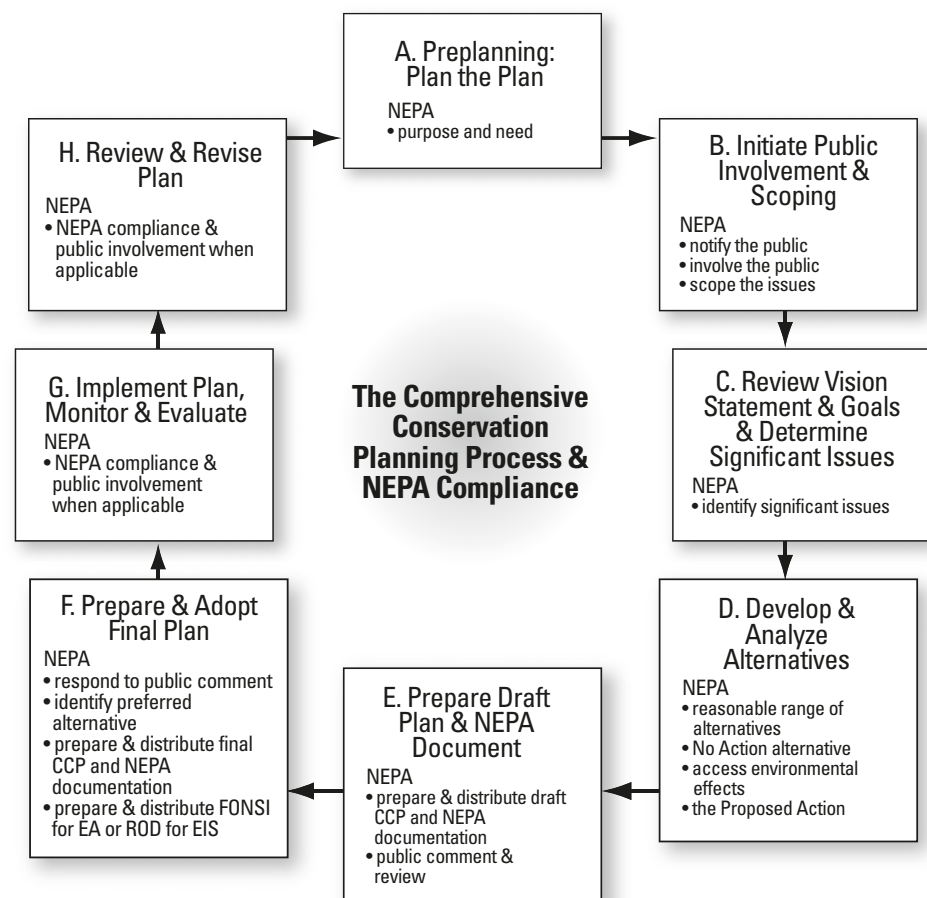
In 2003, the Director of the Service approved our Preliminary Project Proposal to consider an expansion of the Wallkill River refuge acquisition boundary by more

than 16,000 acres. We met with our land protection partners at the refuge in July 2005 to discuss lands now protected and lands in need of protection in and around Sussex County. That discussion included staff from local congressional offices, state, county and municipal offices, and representatives of the National Park Service, the New Jersey Conservation Foundation, The Trust for Public Land, New Jersey Audubon and The Nature Conservancy.

In October 2005, we distributed a Planning Update to our general mailing list and the hunter mailing list. That newsletter described where we were in the planning process, provided a timeline for completing the plan, and summarized its draft alternatives.

In February 2008, we completed and released a draft CCP/EA for a 66-day period of public review and comment. We then reviewed and analyzed all of the written and oral comments. Appendix J summarizes those public comments and our responses to them. In some cases, our response resulted in a modification to alternative B, our preferred alternative. Our modifications included additions, corrections, or clarifications, which we have incorporated into this final CCP.

Figure 2.1. The Comprehensive Conservation Planning Process and its relationship to the National Environmental Policy Act of 1969.



Our Regional Director has signed a Finding of No Significant Impact (FONSI) (appendix K), which certifies that this final CCP has met agency compliance

requirements, and will achieve refuge purposes and help fulfill the Refuge System mission. It also documents his determination that implementing this CCP will not have a significant impact on the human environment and, therefore, an Environmental Impact Statement (EIS) is not required. We will make these documents available to all interested parties. Implementation can begin immediately.

We will evaluate our accomplishments under the CCP each year. More intensive monitoring is proposed for each program area. If future monitoring or new information results in the predication of a significant impact, it will require additional analysis.

Issues and Opportunities

From the issues workbook, public and focus group meetings, and planning team discussions, we developed a list of issues, concerns, opportunities, or other items requiring a management decision. We sorted them into two categories:

Key issues—These were unresolved public, partner, or Service concerns without obvious solutions supported by all at the start of our planning process. Along with the goals, the key issues formed the basis for developing and comparing the three different management alternatives in the draft CCP/EA. The key issues listed below also share this characteristic: The Service has the jurisdiction and the authority to address them.

Issues and concerns outside the scope of this analysis—These issues do not fall within the scope of the “Purpose of and Need for Action” in this plan, or they fall outside the jurisdiction and authority of the Service. We discuss them after “Key Issues,” below, but this plan does not address them further.

Key Issues

- 1. Which species should be a focus for management, and how will the refuge promote and enhance their habitats? In particular, what will be the management emphasis for federally listed species such as the dwarf wedgemussel, bog turtle and Indiana bat?**

Congress entrusts the Service with protecting federal-listed endangered or threatened plant and animal species, anadromous and inter-jurisdictional fish species, migratory birds, and certain marine mammals, and mandates their treatment as management priorities when they occur on a refuge. Appendix A identifies federal trust resources on the refuge, as well as other species and habitats of special management concern.

Managing the refuge to support recovery goals for the federal-listed threatened bog turtle is a priority. Chapter 4 identifies and describes actions that will ensure its protection. The northern population of the bog turtle has experienced a 50-percent reduction in range and numbers over the past 20 years (USFWS 2001). The greatest threats to its survival include the loss, degradation, and fragmentation of its habitat, compounded by the increasing take of long-lived adult animals for the illegal wildlife trade. The shallow wetlands that this species prefers are easily drained or impounded to create farm ponds or reservoirs. Either situation displaces bog turtles.

Managing for this species is at a critical point, especially in northern New Jersey, where residential development is occurring at a significant rate, and 90 percent of the bog turtle habitat is privately owned (USFWS 2001). Long-term recovery is based on the protection and conservation of bog turtle population analysis sites (PAS). One of the recovery objectives of the sub-unit in our planning area is to maintain at least five PAS's in the Wallkill River watershed. Coordinated management and land acquisition and protection by federal, state, and local

agencies will be essential in achieving that objective and reversing the decline of this species.

The federal-listed endangered dwarf wedgemussel may in the future become a management priority at the refuge. The damming, channeling, high sediment loading, and increasing agricultural, domestic, and industrial pollution of rivers are the primary reasons for that species' decline throughout its range (USFWS 1993). Surveys began in August 2000 to determine whether potential habitat for this species exists in the Wallkill River and its tributaries. The surveys found none, but the presence of one of their host fish, the tessellated darter, is promising. More surveys are needed to determine with certainty whether dwarf wedgemussels are present, and the potential for their introduction. Until we know more, our ability to support recovery objectives on the refuge is limited.

The refuge first conducted mist net surveys for Indiana bats in August 2008. Surveyors found three Indiana bats, including one post-lactating female and one juvenile, which indicates the presence of a maternity colony nearby. The refuge had previously suspected the presence of Indiana bats, in part because they have been documented in several nearby locations. A maternity colony was found in the summer of 2007 in Wantage, about 2.25 to 4 miles from refuge lands; and since the mid-1990's, Indiana bats have been known to hibernate in three areas near Hibernia, N.J., about 20 miles south of the Wallkill River refuge. Also, the bats' summer focus area—where bats could potentially occur between April 1 and September 30—includes the entire refuge. Furthermore, the refuge provides riparian, forested and upland habitat types typically used by Indiana bats in summer for roosting and foraging.

The Service listed the Mitchell's satyr butterfly as an endangered species in 1992. Two well-known sites in Sussex and Warren counties recently supported the species. The confirmed sites are both fens located in areas of limestone bedrock in the same watershed, similar to habitats used by the federal-listed threatened bog turtle.

Migratory birds are also a federal trust resource. The challenge with migratory bird management lies in determining how each refuge can contribute significantly to the conservation of migratory bird species of concern. One important question we address is "Which migratory bird species and associated habitat types should be a priority for management on these refuges?" Management emphasis on certain species or species group may preclude management for other migratory bird species of concern. On the refuge, for example, managing for grassland-dependent bird nesting habitat would likely reduce the habitat potential for interior forest nesting birds. Migratory bird species associated with both habitat types are in decline throughout PIF Area 17.

Management for waterfowl is also a Service priority, and is one of the purposes for which the refuge was established. The refuge lacks high concentrations of nesting waterfowl, but is important during the spring and fall migration season.

This final CCP identifies the migratory bird species of management emphasis, associated management and land protection, and their impacts on other species of concern. Refuge goal 1 addresses our response to this issue.

2. How will the refuge manage invasive, exotic, and overabundant species?

Invasive plant species such as purple loosestrife, common reed (*Phragmites*), garlic mustard, Canada thistle, multiflora rose, reed canary grass, and Japanese knotweed threaten refuge habitats by displacing native plant and animal species, degrading wetlands and other natural communities, and reducing natural diversity and wildlife habitat values. They out-compete native species by

dominating light, water, and nutrient resources, and are particularly menacing when they affect threatened or endangered species habitats, as when purple loosestrife invades bog turtle wetland sites.

Their abilities to establish themselves easily, reproduce prolifically, and disperse readily, make eradicating them difficult. Once they have become established, getting rid of them is expensive and labor-intensive. Many cause measurable economic impacts, especially in agricultural fields. Preventing new invasions is extremely important for maintaining biological diversity and native plant populations. The control of affected areas will require extensive partnerships with adjacent landowners, state, and local governments.

We suspect that several wildlife species on the refuge are adversely affecting natural biological diversity. Native species such as deer, resident Canada geese, and small furbearing mammals such as beavers, raccoons, woodchucks, and muskrats can become problems when their populations exceed the range of natural fluctuation and the ability of their habitat to support them. In particular, issues surface when these animals directly affect federal trust species or degrade natural communities. Small mammalian predators have been known to decimate bog turtle nest sites or destroy Neotropical migratory bird nests. Although we expect some predation in a natural system, concerns arise when it prevents our meeting conservation objectives.

When deer or Canada geese forage excessively on landscaping or agricultural fields, or when beavers and muskrats affect water quality, degrade water control structures, or cause flooding where it is not desirable, they cause adverse economic impacts. When deer populations become excessive, they can also compromise human health and safety. An increase in vehicle-deer collisions or the incidence of Lyme disease raises community concerns. As adjacent lands are developed for residential or commercial use, the concentrations of deer can rise on less developed lands, like the refuge. The measures for controlling each species are potentially controversial. They may include lethal removal, visual and acoustic deterrents, and destroying nesting or den sites. Our response to this issue is addressed in refuge goals 1 and 2.

Turkey hunting is one of the most popular hunt seasons on the refuge.



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3. What hunting opportunities will the refuge provide?

The Wallkill River refuge has a rich, diverse hunting heritage, demonstrated by the number of hunters and hunter visits to the refuge. In recognition of that, the refuge has had the region identify hunting as an “area of emphasis.” The refuge has held hunts for deer, turkey, migratory birds, woodcock, and winter resident Canada geese, in their respective New Jersey state seasons. (The New York portion of the refuge is closed to hunting.) As we considered which seasons to open our hunt program, our foremost consideration was public safety. In addition, the Service will consider opening newly-acquired lands to hunting as well. We describe our final recommendation under goal 3.

Opinions on hunting vary. They cover the full spectrum from totally opposed to hunting to opening the refuge to all state seasons. A segment of the local community continues to oppose hunting, based on concerns about safety,

disturbance, harm to non-target wildlife, and the impact on visitors engaged in other priority public uses. Others opposed to hunting feel that the refuge should function as a sanctuary for all species, and that hunting is incongruous with such management.

Others support hunting only when it is needed to control and manage populations, but not as a recreational activity. Still others, including state fish and wildlife agencies, fully support hunting, and would like to see the refuge increase opportunities to conform to state hunting seasons.

4. Will the refuge be open to bear hunting?

After years of debate, the New Jersey Fish and Game Council re-established a bear hunt in 2005, but rejected a hunt for 2006 and 2007. The debate has been ongoing on whether or not to hunt bear, especially in northwest New Jersey, where most of the state's black bear population lives. The public is divided on this issue, as are the people who visit the refuge. During public scoping, some respondents expressed concerns over allowing a bear season, while others wanted us to offer one on the refuge. The draft CCP/EA proposed to open the New Jersey portion of the refuge to bear hunting concurrent with the state bear hunting seasons. The New York portion is closed to hunting. Service policy requires that a refuge submit a new hunt package, consistent with 605 FW 2, if a major change to the hunt program is proposed. A major change is defined for this purpose as a new hunting activity, adding a new species to the program, or opening a new area to hunting. In this case, the major change is adding a new species (bear) to the refuge hunt program. An opening package for hunting consists of the following elements: a Federal Register notice announcing the new regulation; a final rule published in 50 C.F.R. § 32.49.C; a new annual hunt plan; a compatibility determination; an Endangered Species Act section 7 consultation; copies of letters requesting State and, where appropriate, tribal involvement and the results of the request; draft news release; an Outreach Plan; and draft refuge-specific regulations. The draft CCP/EA and the final CCP contains many of these elements, including the NEPA document, the compatibility determination, and the Endangered Species Act Section 7 consultation. By publishing the final regulation and issuing a Finding of No Significant Impact for the final CCP we will complete two more elements of the opening package. Finally, we will revise 50 C.F.R. § 32.49.C, issue a new annual hunt plan and complete the remaining elements of the opening package before officially opening the refuge to bear hunting.

5. How will the refuge provide opportunities for compatible, wildlife-dependent uses, realizing that those uses occasionally conflict?

The Refuge System Improvement Act does not establish a hierarchy among the six priority uses of refuges; nor does it establish any clear process for determining such a hierarchy. Unfortunately, those uses sometimes conflict with each other in time, space, or the allocation of resources. One example is environmental education and interpretation programs on an area open to hunting at the same time. In the Northeast Region, however, we have established "areas of emphasis" to identify where each refuge may make its greatest contribution to the "Big 6" recreational activities associated with wildlife-dependent recreation. Wallkill's areas of emphasis are hunting and interpretation.

Some people express concerns when refuge resources are disproportionately allocated toward one use, and opportunities for other uses suffer. An additional challenge for the Refuge Manager is determining the carrying capacity of the

refuge to support these uses while still managing to provide a quality experience. Our responses to this refuge issue are addressed in refuge goals 3 and 4.

6. How will the refuge manage compatible non-priority public uses on the refuge?

Service policy provides that a use might be inappropriate based on compliance with other laws and policy, the availability of resources to manage the uses, possible conflicts with other uses, safety concerns, or other administrative factors but may nonetheless be compatible, in the sense that it may not materially interfere with the purposes of the refuge or the Refuge System's mission. Other uses, such as historic uses, might be appropriate and compatible, but may not be priority public uses or wildlife-dependent uses.

We heard from people both supporting and opposing certain non-priority public uses that have historic precedence in the area. Most frequently discussed during the release of the draft CCP/EA were horseback riding and dog walking. Although we have not done an official Appropriateness Finding for horseback riding, our experience is that horseback riding can cause significant damage to refuge resources. Therefore it is not currently permitted on the refuge. Through the CCP process we completed an Appropriate Use Finding and a Compatibility Determination for dog walking on the Liberty Loop Nature Trail and found that use both appropriate and compatible. The Appalachian Trail (AT) runs concurrent with a portion of the Liberty Loop Nature Trail. Permitting dog walking on the AT portion of the Liberty Loop Nature Trail would allow through-hikers with dogs to continue on the AT rather than forcing them to walk on public roads with limited shoulder space. More importantly, because dogs are leashed and because the trail follows a dike system that isolates the activity from the surrounding wildlife habitats, the potential impacts are minimal. We will also allow dog walking on the portion of the Liberty Loop Nature Trail that does not run concurrent with the AT because we feel this will not result in any additional impacts beyond those of allowing it only on the AT portion of the trail, and because it will allow refuge visitors to complete the loop trail. We discuss dog walking further in Chapter 4. The Appropriate Use Finding and Compatibility Determination for dog walking can be found in Appendix B.

7. What additional lands will the refuge protect or acquire?

New Jersey is the most densely populated state in the nation. One of the consequences of that distinction is the extreme pressure it places on natural resources. Previously undeveloped lands are being developed rapidly. Northern New Jersey and southeastern New York have become bedroom communities for the New York City metropolitan area. Commuting two hours to the city is now commonplace. That growth threatens natural areas. Many are becoming isolated islands of habitat, so fragmented that they can no longer support the full diversity of native wildlife and plant species. Without the protection of large, contiguous natural areas, species that require large expanses of habitat will be the first to suffer. As we mentioned above, the decline of species such as the federally listed threatened bog turtle can be attributed directly to the loss and fragmentation of its habitat.

During our public scoping process, many individuals encouraged us to expand the refuge for a variety of reasons. Many expressed concern over the rapid rate of development, the increased burden on their communities' services brought on by development, and their communities' loss of rural character. Some spoke of the direct benefits, and even the necessity, of maintaining land in its natural

state, which the refuge exemplifies. For example, they recognize that wetlands are essential habitat for wildlife, lessen the damage from flooding, and naturally break down contaminants in the environment. Also, forests and grasslands protect the quality of our drinking water, help purify the air we breathe, and provide important areas for outdoor recreation.

On the other hand, some individuals are concerned that increasing federal ownership will greatly impact property tax revenue to towns and counties. Federal lands are not taxed. Instead, the Service manages the Refuge Revenue Sharing Payments Program to help offset that loss of tax revenue.

To officially plan for a possible expansion, the refuge submitted a Preliminary Project Proposal to the Service Director in 2001, which identified approximately 16,000 acres for potential inclusion into the Wallkill River refuge in Sussex County, N.J., and Orange County, N.Y. The proposal was developed in cooperation with state agencies and other conservation groups during the initial planning phase of the CCP. The refuge received the Director's approval in 2003 to move forward with detailed planning for the proposed 16,000-acre expansion.

Although this final CCP does not propose the 16,000-acre expansion as requested in the 2001 proposal, we do propose a 9,550-acre expansion area consisting of portions of the Focus Areas identified in the original proposal. The Focus Areas were refined in response to development by private landowners or acquisition by conservation partners. We also used the regional and ecosystem plans mentioned earlier in this chapter to help prioritize our land acquisition proposals. Refuge goals 1, 2 and 3 address our responses to this issue.

8. How will the refuge cultivate an informed and educated public to support the mission of the Service and the purposes for which the refuge was established?

Community involvement in support of our Refuge System mission is both very important and very rewarding. Outreach ties the refuge to local communities, inspiring an interest in the Refuge System and in natural resource conservation and stewardship. It is important that people understand what we are doing, why we are doing it, and how we can work together to improve our communities. Our challenge lies in determining how best to reach out, raise the visibility of the refuge in the local community and "cultivate" a relationship. Some people advocate increasing the number of refuge programs open to the public while others promote refuge staff involvement in established community events, government committees, and conservation organizations. Refuge goal 4 addresses our responses to this issue.

9. How will the refuge obtain the staffing and funding necessary to complete priority projects?

Some people expressed concerns about our ability to maintain the existing infrastructure of the refuge and implement plans already in place, given the current levels of staffing and funding. They were also concerned that any new proposals in this CCP will elevate our proposed budget substantially above current allocations, thus raising unrealistic expectations. They pointed out that budgets can vary widely from year to year, because they depend on annual Congressional appropriations. Others supported our pursuit of new management goals, objectives, and strategies in the hope that the CCP will establish new

partnerships and funding sources. It was suggested that the Friends Group can help to obtain funding assistance.

We identify the levels of staffing positions and funding necessary to implement our actions over the next 15 years. Appendix E, “RONS and SAMMS,” presents the management and staffing needs. Appendix F, “Staffing Charts,” lists the essential staffing levels already approved for the refuge. Ultimately, whatever funding resources the Congress or other source allocates to the Service, we will use them better because of having an approved CCP.

10. How will we preserve, protect, and interpret cultural resources on refuge lands?

By law, we must consider the effects of our actions on archeological and historic resources. We will comply with Section 106 of the National Historic Preservation Act (NHPA) before disturbing any ground. That compliance may require a State Historic Preservation Records survey, literature survey, or field survey.

Our review of State Historic Preservation Office site files in both New Jersey and New York identified 63 archeological sites in the area. Of those, 25 lie within the refuge boundary; the other 38 lie within 3.2 miles of it. They represent both prehistoric and historic periods, and include structural remains as well as buried archeological deposits. Although minimum compliance with the Section 106 of the NHPA is assured, some people expressed an interest in seeing the Service pursue additional, in-depth site surveys, research, and restoration. Refuge goal 4 addresses our responses to this issue.

Issues Outside the Scope of this final CCP

1. Urban Sprawl

The rate of growth in Sussex County, N.J., and Orange County, N.Y., averaged about 10 percent over the past decade. Many workbook respondents and participants at our planning meetings indicated they are greatly concerned about urban sprawl, the rate and location of development, and increased habitat loss and fragmentation near refuge lands. They expressed a desire that lands be zoned agricultural or something other than residential/commercial. The authorities of the Service do not extend to local zoning. However, although we have no control over county or township zoning, we are actively engaged in working with towns to identify important wildlife habitats in need of protection.

2. Water Quality

Many respondents expressed concerns about the water quality of the Wallkill River. Many believe water quality has declined in past decades. Many expressed concerns about the use of herbicides and pesticides on agricultural fields near the river and their impacts on its water quality. Some noted that their concern is substantiated by the fact the river has the highest DDE levels of any tributary of the Hudson River.

Others expressed concerns with town wastewater treatment outputs into the river and adjacent farm dumping and remnant mining operations. The Service has no direct jurisdiction or authority to control those practices unless they are directly affecting federal trust resources. However, refuge staff will continue to work on the Wallkill River Watershed Plan, and with the Wallkill River Task Force and municipal boards and committees, to influence best management practices and restoration activities that benefit water quality and the wetlands in or near the river or its tributaries.

Plan Amendment and Revision

Periodic review of the CCP will be required to ensure that we are implementing management actions and are meeting the objectives. Ongoing monitoring and evaluation will be an important part of that process. Monitoring results or new information may indicate the need to change our strategies.

At a minimum, CCPs will be fully revised every 15 years. We will follow the procedures in Service policy and the requirements of NEPA for modifying the CCP, its associated documents, and our management activities as needed.

Chapter 3

Kevin Holcomb/USFWS



Wetlands are an important refuge habitat.

Refuge and Resource Descriptions

- Introduction
- Physical Environment
- Cultural Resources
- Socioeconomic Setting
- Refuge Administration
- Biological Resources
- Public Use

Introduction

This chapter describes in detail the physical, cultural, socioeconomic, biological and administrative environments of the Wallkill River. It relates those resources to our refuge goals and key management issues, and provides context for our management direction, which we present in chapter 4.

Physical Environment

We adapted the following information on landscape formation, physiographic provinces, and habitat complexes from “Significant Habitat Complexes of the New York Bight Watershed,” a study by our Coastal Ecosystems Program in Charlestown, R.I. The Wallkill River refuge lies in the Hudson River watershed, which is part of the larger New York Bight watershed (USFWS 1997).

Landscape Formation

The rich, varied physical landscape of the New York Bight watershed contains a number of distinctive regional geomorphic provinces and sections. Their variety arises out of several concurrent or succession events: the combination of complex bedrock and surficial geology and recent glacial history; historical mountain-building and land-uplifting forces; and the dynamic processes of erosion, sedimentation, and chemical and physical weathering on various rock types. That region’s extraordinary physiographic diversity, geological complexity, climate and historical events have contributed directly to its remarkable biological diversity and the current distribution of its fauna and flora.

The work of glaciers and the continental ice sheet during the most recent glacial period, the Pleistocene Epoch, has been one of the most interesting, significant factors in shaping the modern landscape of a substantial part of the Wallkill River watershed and, indeed, much of North America. Although the Pleistocene began more than a million years ago, and was characterized by a series of at least four major glacial advances (glacial stages) and retreats (interglacial stages), its last glacier, the Wisconsin, most profoundly influenced the landscape of the northern section of this region. The Wisconsin glacier advanced between 70,000 and 100,000 years ago, and only retreated from this region between 10,000 and 15,000 years ago. At its height, it covered the watershed with an ice sheet up to 1.6 kilometers (1.0 miles) thick, although it was considerably thinner along its margins. The retreating glacier deposited a layer of unsorted and unconsolidated glacial debris, or glacial till, ranging in size from clay particles to huge boulders on the watershed landscape. Its retreat left the post-Pleistocene landscape devoid of higher plants and animals. That rock-strewn, polished bedrock surface offered a clean slate for the ecological processes leading to the migration and colonization of modern plant and animal communities.

As the global climate warmed and the glacial front retreated, it left many smaller, recessional moraines and other distinctive glacial landforms—kames, kettles, eskers and drumlins—across the landscape north of its terminal moraine. Water melting from the ice sheet created several large, glacial lakes in the watershed: The most prominent were Glacial Lake Passaic, Glacial Lake Hackensack, Glacial Lake Hudson, and Glacial Lake Albany. They lasted for thousands of years, and their remnants are evident today in lakeshore sand and dune deposits and basins of deep marsh peat and lake sediments. Many smaller lakes and wetlands north of the terminal moraine also were formed from the blockage of preglacial streams by glacial deposits, or were excavated by the ice into the bedrock. Those glacial lakes covered almost the entire Wallkill basin. Their bottoms received extensive deposits of organic matter that is the source of the region’s fertile “black dirt.”

Physiographic Provinces

The 1997 report delineates the New York Bight watershed into physiographic provinces and habitat complexes based on landscape features—geology, landforms, topography, altitude, relief, geological and glacial history, and hydrology—and associated biological communities and species populations. The

province serves as the primary hierarchical landscape unit within which we group and describe the various individual habitat complexes.

Upper Wallkill River Valley Habitat Complex

The Wallkill River refuge lies in the Upper Wallkill River Valley Habitat Complex. The 1997 report describes that habitat complex in a rolling valley in the Appalachian Ridge and Valley physiographic province between the Kittatinny Ridge to the west and the Hudson Highlands to the east. That valley is part of the Great Valley, which extends from Canada to the southern United States. Elevations in the complex range from sea level to 200 meters (650 feet) above sea level. Limestone, dolomites, and shales underlie the valley. Metamorphic, crystalline rocks such as gneisses and schists compose the Highlands. The Kittatinny Ridge is composed of sandstones and conglomerates. The terminal moraine of the Wisconsin glacier crosses the valley well south of the habitat area near the Delaware River. A recessional moraine crosses the valley just south of the habitat complex from Ogdensburg west to Culvers Gap. Glacial lake sediments underlie the major wetlands in the complex, including the Wallkill River bottomlands and the upper Wallkill River between the Highlands and Pimple Hills, Papakating Creek, Crooked Swamp, and Wildcat Brook (USFWS 1997).

Soils

The Wallkill River Valley, previously a mix of wetland types, was cleared and drained during the past century. The valley's fertile Carlisle muck soils were highly desirable for farming. Before that drainage, diverse wetlands supported many nesting and wintering waterfowl. Soil maps from the Sussex County Soil Conservation District and Planning Board indicate that "prime farm land" soils, specifically Washington, Wooster, and Riverhead loams, are scattered throughout the refuge. Unique soils include Carlisle muck and Wallkill silt loam, both very productive, which cover large areas in the refuge boundary.

The following section on soils was adapted from the report "Archeological and Historical Reconnaissance of the Wallkill River National Wildlife Refuge, Sussex County, New Jersey, and Orange County, New York" (Maymon et al. 2002).

"Soil information was extracted from the United States Department of Agriculture Soil Conservation Service (now known as the Natural Resources Conservation Service) county soil surveys for the project area. Table 1 lists the soil series identified in the project area. Soils are discussed here on an association level.

"A total of 52 soil series types were identified within the boundaries of the Wallkill River refuge. Approximately one-third of these soils by count (n=19) and approximately two-thirds of the soils by area are classified as hydric. Hydric soils are somewhat poorly drained to very poorly drained, and may be frequently ponded or flooded. The most common hydric soil series by area found in the Wallkill River refuge are Carlisle muck, Sloan and Wayland silt loam, Wallkill silt loam, and Livingston silty clay loam.

"Prehistoric settlement is not generally expected in areas with hydric soils. Hydric soils in the Wallkill River refuge generally are found below 400 ft. amsl in the floodplain or wetlands of the Wallkill Valley. Hydric soils in the Wallkill Valley generally formed from glacial lake bottom sediments. Those sediments consist of relatively impermeable, thinly layered clay, silt and fine sands.

"Conversely, non-hydric soils identified in the Wallkill River refuge usually lie above 400 ft. amsl. Found in small high spots in the floodplain and along the edges of the river valley, non-hydric soils are usually better predictors for prehistoric activity. Non-hydric soils in the Wallkill Valley formed in

discontinuous glacial till, continuous till, stratified ice contact sediments, and stratified ice marginal sediments. Glacial tills are unstratified and unsorted boulders and gravel in a matrix of mixed sand, silt, and clay. Although these deposits are relatively impermeable, their sandier nature in uplands allows for better drainage. Stratified ice contact and ice marginal sediments consist of stratified sand and gravel. Sediments generally are permeable and thick.”

Contemporary Influences on the Landscape

Much of the valley has been cleared for agriculture and, more recently, is being converted to residential and some commercial development. Dairy or crop farms with corn and hay predominated, although horse farms replaced many of the struggling dairy and crop farms. Abandoned farms are now old-field or early successional shrubland habitat. Mining for gravel, clay, peat, soil and limestone has occurred in the area, and still occurs to a lesser extent.

Air Quality

National Ambient Air Quality Standards monitor six types of air pollutants (carbon monoxide, nitrogen dioxide, ozone, lead, particulate matter, and sulfur dioxide) known to affect visibility, acid deposition, and human, animal or plant health. Five of those pollutants are factors in the EPA Pollutant Standards Index, a daily measure providing an overall rating of air quality: good, moderate, unhealthy, very unhealthy, or hazardous. The Wallkill River refuge is located in the greater New York metropolitan area. Sussex County, N.J., is not monitored for the Pollutant Standards Index; however, both the New York metropolitan area and the State of New Jersey had a number of unhealthy days in 2002 due to ground-level ozone. The Clean Air Act (1991) designates both New Jersey and New York as non-attainment areas for ozone (smog). On most days, prevailing winds bring air to the refuge from the west and north, but some air pollutants from the New York metropolitan area filter into the region.

Water Quality and Contaminants

Our Division of Environmental Contaminants updated in 2005 the contaminants assessment protocol (CAP) originally done for the Wallkill River refuge in 2000. The CAP process is a standardized, comprehensive approach to assess the potential threats environmental contaminants pose for national wildlife refuges and other Service lands. The information below comes principally from the 2005-updated CAP, which identifies several contaminant issues.

As we mention in chapter 1, the Wallkill River flows north from Sparta, N.J., and passes through Hardyston, Franklin and Hamburg before entering the refuge. The dominant contaminant pathways revealed in the CAP are the Papakating Creek and Wallkill River. Many industrial and mercantile facilities and private residences are located along or close to that creek and the river. The creek and its tributary, Clove Brook, drain the area around Sussex before entering the southwest side of the refuge, then converge into the Wallkill River. Sussex is the largest concentrated population center close to the refuge. All of those factors could contribute contaminants to the aquatic systems of the refuge.

Point Source Pollution

The effluent of the Sussex County Municipal Utilities Authority wastewater treatment plant is discharged just south (upstream) of the existing refuge boundary. During periods of low river flow and high withdrawal demands, the effluent may be a principal contributor of river water. It is unknown how much of the water in the river is effluent, particularly during periods of low flow; nor is it known what impacts on water quality, if any, the discharge has on the water that flows through the Wallkill River refuge. The potential threats to the Wallkill River include treatment plant overflow or failure, illegal discharging of various chemicals, and failing septic systems for homes located near the refuge. Those threats could introduce elevated levels of nutrients or partially treated sewage on the refuge. The chronic input of effluent into the Wallkill River also presents the

potential for elevated levels of endocrine-disrupting substances, pharmaceuticals, and other effluent-related compounds.

Sediment zinc concentrations reported in a 1997 Technical Assistance Report (USFWS 1997a) exceeded the state's Severe Effects Levels (SEL) at several sampling stations in the Wallkill River within the refuge. The likelihood was considered high that adverse effects would be observed among sediment-dwelling benthic organisms. Zinc mining near the refuge ceased in 1986. We expect the additional zinc loading from former mines to be minimal.

Non point-source pollution

Evaluated non-point source pollution in the Wallkill River watershed in general shows a shift from agricultural sources to those resulting from increasing urbanization. In the upper Wallkill River, the deleterious effects of both urbanization and agricultural activities are on the rise. Increasing construction and urban surface run-off have resulted in sediment loading and storm water contamination, respectively. Local officials have stressed the need for storm water management, such as the use of large detention ponds in the region. In addition, agricultural run-off from crop production, pasturelands, confined animal operations, and a former zinc mine are all suspected of adversely affecting water quality and promoting eutrophic conditions in the Wallkill River. Other important non-point-source contaminants include the runoff from roadways, which can potentially introduce petroleum-related polyaromatic hydrocarbons, and residential pesticide applications. The historical, widespread application of pesticides for mosquito control and agricultural production has introduced many persistent organochlorines into areas on and around the refuge.

The inadvertent or illegal dumping of household or industrial wastes into the watersheds associated with the refuge is a conspicuous, indisputable contaminants threat. Spent containers of household or industrial products (e.g., cleaning agents, paints, solvents, motor oil) have been observed routinely discarded in stream drainages, on private lands, and along roadways or across refuge property. Those containers, when compromised by environmental factors, will release any residual product onto the soils and into surface waters, establishing a pathway for entry into the refuge.

Pursuant to state Water Quality Standards and the purposes of the refuge established by Congress, the Service petitioned the New Jersey Department of Environmental Protection (NJDEP) to upgrade the Category 2 anti-degradation designation of the Wallkill River to Category 1, which would forbid the degradation of its water quality. As an alternative, the state funded the development of the Wallkill River Watershed Plan, mentioned in chapter 1. The refuge works closely with the Wallkill Watershed Management Group, the organization created as a result of the watershed plan, to sample and monitor water quality in the river. Through 1997, the river was monitored near Sussex, just below the confluence with Papakating Creek, and near Unionville, N.Y.

According to the Draft Initial Surface Water Quality Characterization and Assessment Report for Wallkill Watershed Management Area (NJDEP 2000), phosphorus levels met the state criterion for water quality of 0.1 mg/l between 1995 and 1997. Total phosphorus in bottom sediments was 430 mg/kg in the Wallkill River at Sussex and dropped to 42 mg/kg in the Wallkill River near Unionville between 1990 and 1994. This drop may be due to the large wetland area acting as a phosphorus sink. Nitrate levels are very low at both monitoring locations (about 1 ppm), but were rising slightly between 1986 and 1995 in the Wallkill near Unionville (+0.039 mg/l per year). These data indicate very good water quality with respect to total phosphorus and total nitrate.

The Draft Report shows fecal coliform levels were elevated at both monitoring locations, indicating poor water quality with respect to fecal coliform bacteria. As with many areas in the state, elevated fecal coliform in the Wallkill River impairs its use for swimming.

The Draft Report also reveals that water quality is very good for most parameters in the Papakating Creek, a major tributary of the Wallkill River. However, testing between 1986 and 1997 indicates marginal water quality with respect to total phosphorus, and poor water quality with respect to fecal coliform bacteria.

Cultural Resources

An historical and archeological reconnaissance of the Wallkill River valley and its environs (R. Christopher Goodwin & Associates, Inc., 2002) provides detailed information on their cultural resources. Archival research and interviews gathered available materials about the history, prehistory, and previous historical and archeological investigations on or near the refuge. The review of the archeological site files in both New Jersey and New York identified 63 archeological sites either inside or within 3.2 km (2.0 mi.) of the refuge. Of those, 25 lie within the refuge boundary. They represent both prehistoric and historic periods, and include structural remains as well as buried archeological deposits.

Prehistoric Resources

According to that historical and archeological reconnaissance, quarry sites appear in the Wallkill River valley above 420 feet above sea level, where the Allentown Dolomite Formation tends to outcrop. This area also appears to contain a wealth of rock shelter sites. Three rock shelters are known to exist within the boundary of the Wallkill River refuge. Other camp and resource procurement sites are located mainly at or near 400 feet above sea level. Each of the three rock shelter sites within the project area allegedly contained fluted Paleo-Indian points. The review of collections from several unregistered sites located outside the Wallkill River refuge suggests that open-air sites in the valley also might contain Paleo-Indian components. Additionally, most of the collections from sites in the Wallkill River refuge contain projectile points typical of the Late Archaic Period. Farmers plowing the fields along the Wallkill River regularly found artifacts, primarily arrowheads.

Early Historical Land Use

The reconnaissance report also indicated early land uses within the Wallkill River valley.

“In its natural state, the Wallkill River valley presented the earliest settlers with nearly 40 square miles of flat, virtually untillable land bisected by a sluggish, sinuous stream. The glacial moraine at Denton, New York, held spring freshets and runoff and kept the Wallkill meadows perpetually swampy. Therefore, the Wallkill bottomlands were developed only marginally, if at all, during the seventeenth and eighteenth centuries. The few roads of the period skirted the edges of the swamplands, and farm complexes would have been constructed on dry ground, either on the “islands” of remnant glacial till or on the toe slopes of the ridges that defined the limits of the Wallkill Valley.

“Although they knew that these river bottomlands potentially were very fertile, eighteenth century owners of these so-called ‘Drowned Lands’ did not possess sufficiently powerful technology to drain them successfully and render them cultivable. The most frequent use was to provide forage for livestock, and landowners rented out grazing rights; the kinds of archeological signatures left by such land use would be minimal, at best. Because the sluggish river also provided a perfect

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Farming was, and is, an important part of the regional economy.

habitat for eels at spawning time and eels were a popular eighteenth century food item, an eel fishery also developed relatively early along the Wallkill and its major tributaries.... Eels trapped in the many weirs constructed within these waterways were packed in brine and shipped to urban markets, thus providing area residents with an additional source of income.

“The implications of these land use patterns are that, except for the eel weirs within unmodified sections of the Wallkill River itself, few if any archeological resources representing the earliest periods of historic occupation are likely to be encountered within the bottomlands of the refuge. Archeological sites from this period may be found, rarely, on the ‘islands’ of glacial

till and toe slope margins of the Valley. These areas also are high potential locations for prehistoric activity.”

Socioeconomic Setting

County Populations (New Jersey 2005 and New York 2005)

Development is occurring at a rapid rate in northern New Jersey. In 2006, Sussex County, N.J., had a population of 153,130 (<http://quickfacts.census.gov/qfd/>). This represents a 6-percent increase from 2005. For comparison, the State of New Jersey had an overall 3.6-percent increase in population. The recent passage of the Highlands Water Protection and Planning Act (Highlands Act) will afford additional protection for areas that lie within the designated Preservation Area. It is still too early to predict how the Highlands Act will affect municipal land use and land preservation within the Skylands Landscape Region. However, the Highlands Act will result in additional protection for critical wildlife habitat in areas that lie within the Preservation Area. In the short-term, this will be accomplished through strict limitations on impervious cover; limitations on development on steep slopes, in forested areas, within 300-foot buffers of all water bodies, and in flood areas; and implementation of Category 1 water quality protections on all Highlands waters.

Orange County, N.Y., had a population of 372,893 as of 2005 (<http://quickfacts.census.gov/qfd/>), an increase of 9.1 percent from 2000. According to the New York State Comprehensive Wildlife Conservation Strategy (CWCS 2006), between 2000 and 2015, the greatest increase in human population in New York State will be in the lower Hudson River corridor; specifically, in the increasingly suburban Orange County (13-percent increase by 2015).

These towns lie within the current refuge acquisition boundary. We obtained their populations in 2004 from <http://www.census.gov/>.

Frankford Township, N.J.	5,660
Hardyston Township, N.J.	7,591
Vernon Township, N.J.	25,553
Wantage Township, N.J.	11,315
Town of Warwick, N.Y.	32,596
Village of Warwick, N.Y.	6,590
Town of Minisink, N.Y.	4,193
Sussex Borough, N.J.	2,186

Principal Industries

Sussex County is a bedroom community experiencing a rapid rate of residential development. The number one industry for the area is outdoor recreation, mainly in the form of downhill and cross-country skiing, mountain biking, hiking, sailing, canoeing, kayaking and birding. Recreational facilities such as water parks and golf courses also provide all-season revenue to municipalities. Agriculture contributes to the local economy as well, but overall, farming has declined in importance. Residential growth has outpaced business growth. The area lies within commuting distance of New York City and Bergen and Morris Counties in New Jersey. Because tourism and agriculture constitute most of the economic base, 60 percent of the area's workforce commutes to work outside the county. The manufacturing and technology sectors contribute only minimally to the local economy, due to the lack of major transportation facilities and access.

Many people living in Sussex County worry that residential development will increase at an even more rapid pace because of the Highlands Act. With development limited to the east by the Highlands Act and to the west by the presence of state-protected lands, the Wallkill River valley is the only large area of unprotected land in northern New Jersey that can be developed.

Valuating the Contribution of the Refuge to the Local Economy

National wildlife refuges provide many benefits to local economies. The Trust for Public Land's "Economic Benefits of Parks and Open Spaces" provides examples indicating that property values increase near open spaces. Another document examining these benefits is "Banking on Nature," published by the Service. In 1995, 27.7 million people visited national wildlife refuges. The revenue from those visitors for local businesses was \$401 million, and supported 10,000 jobs (The Trust for Public Land 1999). In 2004, the Banking on Nature report showed that 37 million people visited national wildlife refuges. Revenues rose to \$454 million, and these visits helped support the employment of about 24,000 people. Refuges provide space for natural lands to perform such valuable natural services as the filtration of pollutants from soil and water, which otherwise would have to be done technologically at great expense.

Tourism also increases when refuges provide opportunities for recreational use, which brings revenue to local businesses. Visitors to refuges usually buy gas, food and recreational supplies for fishing, hunting, or observing wildlife. They also stay in hotels or campgrounds and participate in other activities such as golf or shopping. Our "National Survey of Fishing, Hunting, and Wildlife Associated Recreation" (2006) found that that 87.5 million U.S. residents 16 years and older participated in wildlife-related recreation: a 6-percent increase from 2001. The number of hunters and anglers fell from 37.8 million in 2001 to 33.9 million in 2006. The most recent survey also showed an 8-percent increase in the number of wildlife-watchers since 2001 but little change in total expenditures for that activity. Those people spent more than \$120 billion in wildlife-related activities, accounting for 1 percent of the national gross domestic product. The 2006 survey revealed that, in New Jersey alone, 2.85 million residents engaged in hunting, fishing, and wildlife-watching activities, spending \$1.5 billion on wildlife-associated recreation (U.S. Department of Interior and U.S. Department of Commerce, 2006).

Visitors to Wallkill River refuge are local residents, day-trippers from the New York City metropolitan area, or overnight guests, primarily on weekends and during hunting seasons. Those visitors spend money at local businesses near the refuge. In 2000, one refuge hunter informed us that he had spent a total of \$170 for fuel, food, hunting equipment, and one night in a local motel, to support one day of hunting on the refuge. Other refuge visitors have come from as far as Connecticut for an afternoon of bird watching. They also purchase food, fuel, and other merchandise from local vendors.

The total number of visitors each year served by the Wallkill River refuge staff has increased dramatically, reaching more than 30,000 in 1999 after previous highs of around 4,000 in 1997 and 1,000 in 1996. The majority of those visitors (14,400 visitors annually in recent years) use nature trails. We issue permits to about 1,200 individuals each year for deer, waterfowl, woodcock and turkey hunting on the refuge.

National wildlife refuges also contribute to local economies through shared revenue payments. Service-owned lands are not taxable; but, under the provisions of the Refuge Revenue Sharing Act, that municipality or other local unit of government receives an annual refuge revenue sharing payment that often equals or exceeds the amount it would have received in taxes if the land had remained in private ownership. In addition, land in public ownership requires little in the way of services from municipalities, yet it provides valuable recreational opportunities for local residents. Table 3.1 shows revenue sharing payments to the municipalities in which the Wallkill River refuge holds land.

Table 3.1. Wallkill River refuge revenue sharing payments, 2000 to 2006.

Town	2000	2001	2002	2003	2004	2005	2006	Total
Vernon, N.J.	\$32,877	\$33,154	\$60,640	\$58,287	\$58,280	\$51,552	\$56,891	\$351,681
Wantage, N.J.	\$20,028	\$19,330	\$22,079	\$22,065	\$22,062	\$19,515	\$20,398	\$145,477
Hardyston, N.J.	\$1,443	\$1,292	\$1,862	\$1,790	\$1,789	\$1,583	\$362	\$10,121
Warwick, N.Y.	\$1,648	\$1,475	\$1,509	\$1,451	\$1,450	\$1,283	\$1,341	\$10,157
Yearly Total	\$55,996	\$55,251	\$86,090	\$83,593	\$83,581	\$73,933	\$78,992	\$517,436

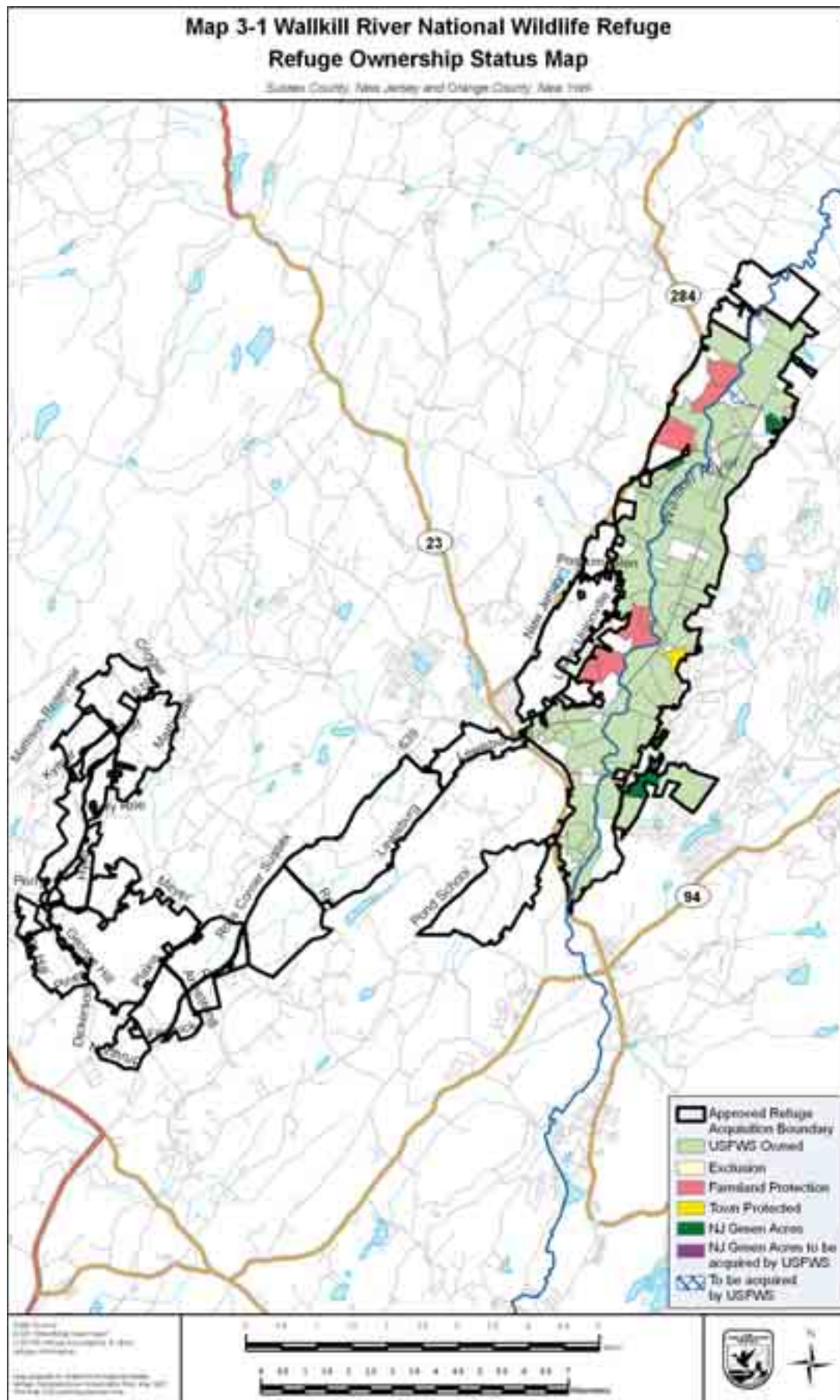
Refuge Administration

Wallkill River Refuge Acquisition History

The Service land acquisition policy is to acquire land only from willing sellers at fair market value. Landowners may sell their land to the Service in fee title (outright), or they may sell development rights through a conservation easement. Private landowners in an approved boundary who do not wish to sell retain full control of their property and their rights to use it, in compliance with applicable local, state and federal regulations. The number of willing sellers at most refuges exceeds the availability of funds to purchase land. This refuge is no exception.

To date, we have acquired more than 5,100 acres within the approved acquisition boundary. Tables 3.2 and 3.3 provide an annual summary of land acquisition activities, and map 3-1 shows the status of refuge ownership. Willing sellers have created a steady history of land acquisition at the refuge. We maintain a waiting list of willing sellers in the approved acquisition boundary. The Sussex County Farmland Protection Program also has protected some of the land in the boundary from development. Those lands, which will remain in private ownership, cannot be developed and must be actively farmed. Other lands within the acquisition boundary are being purchased by the State of New Jersey Green Acres Program, and will be managed by the Service as part of the refuge. When future funds are available, the Service will purchase those lands from Green Acres.

In 2002, the Service bought a 156-acre inholding at the northern end of the refuge from Mt. Bethel Humus Company, Inc. (also known as Glacial Soil Laboratories), a commercial company that mines and sells topsoil, peat humus and clay. Due to the structure of the real estate agreement, the company retained the mining rights on the land for 10 years from the date of purchase. When the



mining rights expire in 2012, the Service will assume full management and ownership of the land.

Two natural gas pipelines transect the refuge at its southern end. Tennessee Gas Pipeline and El Paso Corporation own one pipeline, and NUI Elizabethtown Gas owns the other. The refuge has cooperative agreements with both pipeline owners to allow them to clear brush and vegetation from the right-of-ways on the land covering the pipelines. The refuge has similar agreements with utility companies that maintain power line right-of-ways on the refuge.

Two abandoned rail beds transect the refuge. The former Lehigh-New England railroad bed runs almost the entire length of the refuge, from Sussex Borough north to the State of New York. Part of that abandoned rail bed constitutes the Liberty Loop Nature Trail. The former rail bed of the Hanford Branch of the New York, Susquehanna and Western Railroad runs along the southernmost two miles of the refuge and constitutes the Wood Duck Nature Trail. The refuge owns portions of both former rail beds.

Our land acquisition funds mainly come from the following two sources, neither of which comes from general tax revenues: the Land and Water Conservation Fund, appropriated annually by Congress; and the Migratory Bird Conservation Fund, which is replenished through the sale of federal duck stamps to conservationists and migratory waterfowl hunters and the federal excise tax on firearms and ammunition. Some funding also comes to the Service through North American Wetlands Conservation Act (NAWCA) grants. Annual expenditures for land acquisition at the refuge average between \$1 million and \$1.5 million. That level of funding is insufficient to purchase land from all the willing sellers in the approved refuge acquisition boundary. In fact, some lands in the boundary have been sold and developed since the refuge was established.

Table 3.2. Summary of annual land acquisition for the Wallkill River refuge.

Year	Number of Tracts/ Ownerships Acquired	Total Acreage
1992	13/8	1086.73
1993	3/3	487.56
1994	6/5	894.10
1995	5/4	225.53
1996	4/4	243.82
1997	12/6	541.07
1998	6/4	383.75
1999	2/2	391.91
2000	7/4	320.90
2001	1/1	1.01
2002	3/3	226.15
2003	0	0
2004	0	0
2005	3/2	90.52
2006	5/2	213.08
Total	65/45	5,106.13

Table 3.3. Summary of annual land acquisition by municipality for the Wallkill River refuge. Acreage numbers differ from table 3.2 above because the numbers below are rounded to the nearest whole number.*

Year	Hardyston, N.J. (acres)	Vernon, N.J. (acres)	Wantage, N.J. (acres)	Warwick, N.Y. (acres)
1992	112	663	312	0
1993	0	136	352	0
1994	0	599	148	147
1995	0	226	0	0
1996	0	112	131	0
1997	75	406	60	0
1998	0	197	187	0
1999	0	0	392	0
2000	0	212.20	180.70	0
2001	0	1.01	0	0
2002	0	144.62	76.25	0
2003	0	0	0	0
2004	0	0	0	0
2005	0	90.52	0	0
2006	55.13	157.95	0	0
Total	187	2,696	1,839	147

**The Service owns all acreage in fee simple. Acreage is approximate, as it derives from these three sources of accuracy: (1) land deeds (2) surveys or (3) GIS digitizing. For ease of presentation, the maps throughout this document do not show Service ownership of the Wallkill River bottom, or the well-access easement on the refuge. However, all summaries of refuge acres include that ownership.*

Operating Budget

Table 3.4 presents the budget for the refuge over the past five fiscal years. Budget code 1261 is for refuge operations (salaries, utilities) and budget code 1262 is for refuge maintenance. Budget codes 1263 (Visitor Services) and 1264 (Law Enforcement) were created in FY06 to improve our tracking of funds.

Table 3.4. Wallkill River refuge budgets from fiscal years 2003 to 2007.

Code	FY 03	FY 04	FY 05	FY06	FY07
1261	\$471,106	\$635,513	\$394,500	\$200,098	\$233,142
1262	\$1,047,624	\$84,100	\$398,839	\$88,194	\$198,556
1263				\$79,438	\$58,914
1264				\$4,926	\$4,926
*Other	\$106,976	\$216,315	\$174,078	299,139	\$110,326
Total	\$1,625,706	\$935,928	\$967,417	\$671,795	\$605,864

**Funds in the "Other" category can be carried over from year to year; therefore, they do not necessarily represent new funds.*

Funds in the “Other” category are used for one-time projects such as demolishing, constructing, or rehabilitating refuge buildings, replacing refuge vehicles, or building impoundments. Funds in this category can be carried over from year to year, and therefore, do not necessarily represent new funds.

Wallkill River Refuge Staffing

Due to the current fiscal climate, we administratively combined the Wallkill River refuge with Great Swamp National Wildlife Refuge in 2004 to save money by sharing resources. As part of a regional workforce plan, when staffing positions at the Wallkill River refuge became vacant, the Service did not refill them. Subsequently, we have eliminated every position except for the biologist position from the refuge’s staffing chart. In November 2008, the refuge manager position was re-established. Great Swamp refuge will provide as much help as it can to maintain the refuge.

Table 3.5 below shows staffing levels over the last five years. Years that display a decimal reflect part-time employees, employees that left during the year, or student trainees.

Table 3.5. Wallkill River refuge staffing between FY 02 and FY 07.

	FY 02	FY 03	FY 04	FY 05	FY 06	FY07
Funded FTEs*	7.0	7.0	8.2	3.0	2.0	2.0
Approved FTEs	7.0	7.0	8.2	6.0	1.0	1.0

**FTE = full-time employee equivalent*

Facilities and Maintenance

In January 1999, the refuge opened its permanent headquarters at 1547 County Route 565 in Vernon Township, New Jersey. The office, a renovated 5,000-square-foot farmhouse, was built around 1850. It provides office space for refuge staff and volunteers, a conference room/library, and serves as the official visitor contact station for the public. Parking for 41 vehicles is available, as are public restrooms, which are accessible daily. Also on the site is a maintenance complex. In 2006, a manure shed was demolished, and future plans call for demolishing a pole barn. The rehabilitation of the entrance driveway and parking facilities was completed in 2001. In 2005, the refuge added a 30-×35-foot environmental education outdoor pavilion.

Environmental education activities and large public meetings have been held at the Owens Station Environmental Education Center, 119 Owens Station Road in Vernon Township, N.J. That building, which can hold 150 people, formerly was used for indoor soccer. Because the building lacks air conditioning and heating, it has only been used in the spring, summer and fall. It was re-sided in 2003, but budget shortfalls have delayed the installation of a heating and air conditioning system. Other buildings on the refuge include three single-dwelling houses ranging from one to five bedrooms, which are occupied by refuge staff or serve as volunteer housing.

Equipment and staffing to maintain those structures is significantly lacking. Maintenance staff and equipment are also needed to support the refuge habitat management and visitor services programs. In fact, our current existing maintenance workload precludes our undertaking any new, non-emergency projects for the time being, though this is not expected throughout the entire 15-year life of this CCP.

**Relationship with the
New Jersey Department
of Environmental
Protection and New
York State Department of
Environmental Conservation**

The Wallkill River refuge enjoys significant positive relationships with several divisions in the New Jersey Department of Environmental Protection. Of utmost importance is our relationship with the **New Jersey Division of Fish and Wildlife**. That agency manages the resident fish and wildlife population in the State of New Jersey, including the administration of annual hunting and fishing seasons, the enforcement of conservation laws off-refuge, and the identification and protection of state-listed threatened or endangered species. The refuge has worked closely with the Division of Fish and Wildlife in the development of this final Comprehensive Conservation Plan. The refuge also works closely with the Division in managing our deer hunting program, expanding our hunt program to other seasons, inventorying and managing bog turtles on and near the refuge, and in organizing special events. In fact, the establishment of the Wallkill River refuge came about because of that Division's strong support for protecting the wetlands and other natural resources in the Wallkill River Valley.

The **New Jersey Division of Parks and Forestry** manages state lands for public recreation near the Wallkill River refuge, and owns an easement on the part of the Appalachian Trail that runs through the refuge. They also manage an extensive, multiple-use rail-trail system, and are expanding that system to include lands directly south of the refuge. We have worked together to identify areas of natural resource significance that should be protected in the Wallkill River Valley for the benefit of New Jersey residents and visitors.

The **New Jersey Green Acres Program** is purchasing lands within and around the acquisition boundary of the Wallkill River refuge from willing sellers. We will manage lands within the acquisition boundary as part of the refuge, while the Division of Parks and Forestry will manage some of the others. The partnership with Green Acres is saving hundreds of acres of valuable wildlife habitat from development, and protecting the ecological value of the refuge and surrounding lands.

The **New Jersey Forest Fire Service** assists the Wallkill River refuge fire staff with prescribed burns on the refuge. We conduct joint training and have a formal agreement to assist each other on wildfires that occur on or near the refuge.

The **New Jersey Division of Watershed Management** manages funds and provides guidance and structure on the development and implementation of watershed plans. Those plans are designed to maintain or improve water quality in open bodies of water, including the Wallkill River. The Division is also working on projects to control stream bank erosion that not only will improve water quality, but also will ease public access for boaters (canoes and kayaks) and anglers on the river.

The **New York State Department of Environmental Conservation** has assisted the Wallkill River refuge with information about endangered species, biodiversity, and fishery resources, and has worked in conjunction with the refuge to increase the protection of endangered species and important migratory bird habitat adjacent to the refuge.

Partnerships

Our staff is proud of the many and varied refuge partnerships that have developed. Those partnerships are making important contributions to refuge goals and objectives. A brief description of the most significant partnerships at the Wallkill River refuge follows.

The **National Park Service, Delaware Water Gap National Recreation Area** provides law enforcement support to the refuge by providing a 24-hour dispatch.

This has proven to be an invaluable assistance in our efforts to protect natural resources from illegal activities and unauthorized uses of the refuge. In addition, we are entering a cooperative agreement with the National Park Service for the exchange of law enforcement services. We also have jointly conducted fire training, and may be collaborating on natural resource management issues, particularly invasive species, in the future.

The Trust for Public Land (TPL) provides crucial assistance in land acquisition. They have been able to work with landowners directly and often in a timelier manner than the Service. The direct efforts of the TPL have protected nearly 1,500 acres on 10 properties as part of the refuge. Additional acquisitions are in the planning stages at this time.

Ducks Unlimited and the **National Fish and Wildlife Foundation** provide invaluable assistance with funds and engineering support. One completed project was to restore a 335-acre former sod farm on the refuge to a wetland management unit that provides habitat for migrating waterfowl and shorebirds. Additional projects are being considered.

The North Jersey Chapter of the **Ruffed Grouse Society** is working to restore aspen groves and other scrub-shrub habitat for the benefit of the American woodcock and the ruffed grouse.

The **New Jersey Conservation Foundation** and the **Highlands Coalition** have worked to promote protection of the refuge and other lands within the New Jersey Highlands. The first parcel acquired by the service for the refuge was purchased from the New Jersey Conservation Foundation, who had acquired it for conservation protection before the refuge was even established. Their support for sound land use planning and funding for land acquisition are major assets for the refuge.

The **New Jersey Audubon Society** and the refuge are working together to present opportunities for environmental education to schoolchildren and adults alike on the refuge. Our environmental education initiative will be one of the more exciting and important partnerships on the refuge for the coming years. The New Jersey Audubon Society has also been a major supporter of refuge land acquisition over the years.

The **Wildlife Conservation Society, Metropolitan Conservation Alliance** has identified areas outside the refuge of conservation importance, and has provided training opportunities for local governments near the refuge to learn how to balance economic growth and development with natural resource protection. Their efforts have assisted the refuge by creating a positive and more open municipal mind-set towards natural resource stewardship.

The **Nature Conservancy, New Jersey State Office** has identified the Great Limestone Valley, which includes the refuge area, as one of its conservation focus areas. Our common goal is that this land and its sensitive resources, particularly the bog turtle and associated habitats, be protected through education, stewardship, and acquisition.

The **National Audubon Society, Bergen County Chapter** adopted the refuge through its Audubon Refuge Keepers program. Members of the Bergen County Chapter conduct bird surveys on the refuge. They also are a major supporter of refuge land acquisition.

The **Wallkill River Task Force** is a bi-state, multi-agency organization developed to bring more awareness to the Wallkill River. The task force has proven very

successful in raising awareness among local and municipal officials, increasing support for protection of the river, and providing opportunities for the public to access the river. Their support for the river has resulted in increased knowledge and support for the Wallkill River refuge.

The **Wallkill Watershed Coordinator** was created because of the Wallkill River Watershed Plan. The Coordinator provides technical and staff support for various refuge programs including stream bank restoration and public use.

The **Vernon Civic Association** has worked on a number of issues that support the refuge. The most productive to date has been their contributions to the refuge's Centennial Wildlife Garden. Members of the group raised \$2,000 to purchase plants, design the garden, and plant shrubs that are beneficial to wildlife.

The **Vernon Chamber of Commerce** provides the refuge with a complimentary membership and provides advertising space in its annual community guide. We work together to promote wildlife observation and other nature-based recreation in the refuge area.

Volunteer Program



USFWS

The Friends of Wallkill River Refuges was established in 2006.

Volunteers contribute significantly to the refuge biological, public use and maintenance programs. In fiscal year 2006, 35 refuge volunteers contributed more than 2,000 hours. Their work included wildlife surveys, invasive species identification, bluebird box monitoring and maintenance, trail maintenance, carpentry, computer support, clean-up, visitor services support and grounds maintenance.

Although the refuge volunteer program is active, it is dependent on help from the Friends Group and its growth and utilization is unlikely to improve until we hire a volunteer coordinator.

Friends Program

Friends groups generally are non-profit organizations that work to promote refuges and help them accomplish their missions. Their advocacy extends to local communities and local and state elected officials. The groups operate with a board of directors, and each group establishes its own mission and purpose statements. Often, they become involved in land protection and acquisition, public outreach, environmental education and interpretation, volunteer coordination, and fund-raising for projects. In the summer of 2006, a refuge Friends Group incorporated, and actively supports the refuge.

Research

Several research projects, studies, and investigations have occurred on the refuge. The respective resource sections of this document also highlight their results. These are some examples of past or present long-term research projects.

- Lamar Gore, Univ. of Massachusetts, breeding grassland bird habitat, 1995-1997. Thesis available, titled “Habitat Preferences and Management Strategies for Grassland Birds on the Wallkill River National Wildlife Refuge.”
- Dr. John Smallwood, Montclair State University, has worked with the refuge since 1997 on “An investigation of the behavioral ecology and population dynamics of secondary cavity nesting birds in New Jersey.” No final report has been released, but annual reports are available.
- Dr. Lance Risley, of William Patterson University, has worked with the refuge to study bat populations and foraging ecology since 1998. A final report entitled “Characterization of trees used as diurnal roosts by forest dwelling bats” was issued in 1999. A final report entitled “Characteristics of day roosts used by female northern long-eared bats (*Myotis septentrionalis*) was released in 2000. Additional interim reports are available.
- The refuge has collaborated with Professor Bernd Blossey of Cornell University since 1995 to study the use of biological control agents on the eradication of purple loosestrife. The refuge continually receives guidance and consultation advice from Professor Blossey. The refuge has also worked with Professor Blossey on potential biological control agents for *Phragmites*. Interim reports on the effectiveness of biological controls are available.
- The refuge has also worked with Professor Blossey and with Sussex County Mosquito Control on “Toxicity of mosquito larvicides Abate (Temephos), Altosid (Methoprene) and BTI (*Bacillus thuringiensis* var *israelensis*) on leaf-eating beetles (*Galerucella* spp.) used to control purple loosestrife (*Lythrum salicaria*)”.
- Starting around 2002, the refuge has worked with a SUNY Stonybrook graduate student who is researching inflorescence in Canada thistle. The research has been completed, but whether a report exists is unknown.

Special Use Permits

In fiscal year 2006, the refuge issued 15 special use permits, primarily to allow access to closed areas of the refuge. Examples include permits for mosquito-spraying and biological studies. Livestock grazing and haying are other examples described in more detail below.

Haying/Mowing

Since 1992, we have issued permits to local farmers to mow or hay selected grasslands. Grasslands must be periodically mowed to control weeds and the regrowth of trees and shrubs. This arrangement benefits the refuge by reducing our grassland mowing workload and provides participating farmers with supplemental hay. Mowing and haying are not allowed until July 15, after the nesting season for grassland-dependent migratory birds. Table 3.6 shows the number of permits issued for haying/mowing and grazing over the last five years.

Table 3.6. The number (and acres) of special use permits issued for haying/mowing and grazing between 2001 and 2005.

Special Use Permit	2001	2002	2003	2004	2005
Haying/mowing	5 (376 acres)	5 (476 acres)	5 (460 acres)	5 (484 acres)	5 (514 acres)
Grazing	1 (17 acres)	1 (17 acres)	1 (17 acres)	1 (17 acres)	1 (17 acres)

Biological Resources

Vegetation and Habitat Types

Table 3.7 summarizes 20 land use and cover types and their percent cover on land within the current acquisition boundary. Table 3.8 provides the number of acres of each habitat type. For a complete list of plant species on the refuge, visit the refuge website www.fws.gov/northeast/wallkillriver/.

Table 3.7. Land use/land cover types within the Wallkill River refuge acquisition boundary.

Land Use/Land Cover Types	Percent Cover
Residential	10.0 %
Commercial & Services	1.0 %
Industrial	1.0 %
Recreational Land	1.0 %
Cropland & Pasture	14.0 %
Orchards, vineyards, horticulture	0.5 %
Other Agricultural	2.0 %
Deciduous Forest	15.0 %
Coniferous Forest	5.0 %
Conifer/Deciduous Forest	6.0 %
Deciduous/Conifer Forest	3.0 %
Brush land/Shrub land	2.0 %
Streams & Canals	6.0 %
Natural Lakes	0.5 %
Artificial Lakes & Reservoirs	1.0 %
Deciduous Wooded Wetlands	13.5 %
Brush Dominant & Bog Wetlands	8.0 %
Herbaceous Wetlands	9.0 %
Extractive Mining	1.0 %
Altered Lands	0.5 %

The fact that the refuge lies along a riparian corridor dictates its vegetation patterns. A typical riparian corridor consists of a mosaic of wet meadows, mixed bottomland hardwood forest, and higher elevations of wetland types surrounded by smaller tributaries of the main river. Freshwater marshes adjacent to the river contain plant communities of sedges, rushes and cattail. Low-lying forests contain red maple swamps with a mix of other hardwood trees and underbrush of spicebush with some exotic species such as garlic mustard. The hillsides contain fens for bog turtle habitat.

Table 3.8. Habitat types and acreage within the Wallkill River refuge acquisition boundary.

Habitat Type	Acreage*
Grassland	632
Scrub-shrub	999
Forested Wetland	2,098
Non-Forested Wetland	1,216
Forested Upland	1,560
Cropland and Pastureland	406
Open Water	27
Other	148
Total	7,086

*The acreage includes all lands: acquired and unacquired.

Wetlands

Forested wetland, emergent marsh, open water, wet meadow, scrub-shrub wetland, and calcareous fen are the major wetland habitats at the refuge. Most of its forested wetlands are bottomland hardwood forests dominated by red maple along the Wallkill River. The Atlantic white-cedar swamp, considered a globally endangered ecosystem by The Nature Conservancy, is a small but significant type of forested wetland. Wetland forests dominated by Atlantic white cedar (*Chamaecyparis thyoides*) were once widespread along the eastern seaboard. However, the range of this habitat type has contracted significantly from hydrologic alteration, coastal development, and harvesting without regeneration. Important plants in the refuge Atlantic white-cedar swamp include black spruce (*Picea mariana*) and highbush blueberry. Sphagnum mosses (*Sphagnum* spp.) also characterize this swamp.

Emergent marsh and open water species include pondweeds, spatterdocks (*Nuphar* spp.), and duckweeds (*Lemna* spp.). Reed canary grass (*Phalaris arundinacea*) dominates wet meadows. Other common wet meadow plants are swamp milkweed (*Asclepias incarnata*), joe-pye-weeds (*Eupatorium* spp.), common reed, purple loosestrife, and cattail. Scrub-shrub wetland habitats are a successional stage leading to forested wetland. Dominant shrubs include silky dogwood (*Cornus amomum*), multiflora rose (*Rosa multiflora*), and spicebush. Trees include red maple, black willow (*Salix nigra*), and American elm. Sensitive fern, tussock sedge (*Carex stricta*), purple loosestrife, and skunk cabbage are common herbaceous plants. Calcareous fens develop in areas of calcium-rich groundwater discharge and yield a unique assemblage of plants. The continuous groundwater seepage and open vegetation are important habitat characteristics that make these sites suitable for the federal-listed threatened bog turtle.

Upland Forests

Almost all of the refuge's 1,560 acres of upland forest is second growth. A few older field trees remain within the younger forests. The forest tends to be dominated by a mix of northern hardwoods species (sugar maple, American beech, birch) and an oak-hickory species (northern red oak, shagbark hickory). Hemlock stands tend to congregate around small stream valleys. Together these forests provide habitat for upland songbirds and protect water quality. Slope, aspect, and land use history play a significant role in determining local forest composition. A complete list of plant species on the refuge, including tree species, can be found on the refuge website, www.fws.gov/northeast/wallkillriver/.

Grasslands

Farmers who participate in our haying and mowing program harvest approximately 500 acres of cool season grasslands annually. Refuge staff planted a diverse mix of warm season grasses on 57 acres. In addition, 40 acres of old agricultural field were burned in 2002 and 2004. The objective in both projects is to restore natural grassland conditions to support nesting for grassland-dependent birds. Most fields are in the old-field stage of succession, composed of diverse broadleaf plants.

The refuge participated in a region-wide Grassland Breeding Bird Habitat Management Study in 2002. The purpose of the study was to (1) assess the grassland breeding bird use, and vegetation structure or composition of managed grasslands on refuges; (2) evaluate the effects of current grassland management techniques; and (3) assist in our regional contribution to grassland breeding birds. Results from this project, in coordination with the recommendations of the Regional Grassland Bird Working Group, helped the refuge concentrate resources for grassland birds where it makes the most sense. This project assisted managers in improving management techniques to create specific grassland vegetation for specific breeding grassland birds.

Shrub/Scrub Habitat

Shrub/scrub habitats are intermediate successional stages between fields and forests. Common shrub species include gray dogwood (*Cornus racemosa*), multiflora rose, eastern red cedar, and staghorn sumac (*Rhus typhina*). Pioneer tree species such as quaking aspen (*Populus tremuloides*) and gray birch (*Betula populifolia*) are also an important component of refuge shrub lands.

Non-Indigenous Invasive Species

Non-indigenous invasive species are a serious threat to native wildlife and habitats at Wallkill River refuge. Exotic plants degrade habitat by converting diverse native plant communities into single-species monocultures. Introduced animals compete directly with native wildlife. In fact, invasive species are one of the most serious threats to the Refuge System as a whole.

All refuge habitats and wildlife species are vulnerable to the effects of invasive species. Purple loosestrife and *Phragmites* have taken over many refuge wetlands. Consequently, habitat for the federal-listed threatened bog turtle, migrating waterfowl, and other diverse wetland wildlife has been degraded. Canada thistle is invading refuge grasslands. Shrub lands are becoming dominated by multiflora rose, common buckthorn (*Rhamnus cathartica*), and autumn olive (*Elaeagnus umbellata*). Refuge forests have been invaded by tree-of-heaven (*Ailanthus altissima*), Japanese barberry, and garlic mustard. The introduced mute swan (*Cygnus olor*) competes with native waterfowl and marsh birds for food resources and nesting areas. Further, the feeding activities of these large birds damage wetland ecosystems. Feeding and spawning common carp (*Cyprinus carpio*) kill aquatic plants and increase water turbidity. As a result, refuge waters provide poorer habitat for native fish. Feral cats kill many small mammals, ground-nesting birds, and songbirds.

For the past four years, the refuge has participated in a Regional Invasive Plant Species Inventory and Mapping Initiative. Its purpose is to conduct a basic invasive plant inventory of refuge lands to locate, identify, and map invasive plant species. We will use that information to guide the development of control, monitoring, and evaluation initiatives.

Since 1995, the refuge has used Galerucella beetles and Hylobius weevils to control purple loosestrife (*Lythrum salicaria*). These biological control methods were initiated by Cornell University. In 1999, the refuge assessed eastern hemlock stands for wooly adelgid, and is exploring biological control agents for

Federal-Listed Threatened or Endangered Species and Other Species and Habitats of Special Management Concern

dealing with them. As mentioned above, the refuge is also exploring the use of biological control agents for Phragmites.

The refuge provides habitat for 73 types of vertebrate and invertebrate wildlife that are state- or federal-listed as endangered, threatened, special concern, or priority species. They received special consideration during our planning process. We derived those species and their status listed in appendix A from the following sources

- Federal List of Endangered and Threatened Wildlife and Plants
- Service Northeast Region (draft) list of Birds of Conservation Concern
- Endangered and Threatened Wildlife of New Jersey
- New Jersey List of Species of Special Concern (pending)
- List of Endangered, Threatened and Special Concern Fish and Wildlife Species of New York State
- Partners In Flight priority species
- North American Bird Conservation Initiative priority species
- North American Wetlands Conservation Act priority
- Region 5 Birds of Concern

Bog Turtle

The Wallkill River refuge is one of only two national wildlife refuges the federal-listed threatened bog turtle is known to inhabit. Bog turtle populations and potential habitats within the current refuge acquisition boundary are hydrologically and ecologically connected to those on refuge-owned lands (Sciascia and Tesauro 1997). Bog turtles have suffered a 50-percent decline in range and numbers during the last 20 years (USFWS 2001). The refuge preserves open-canopy wetlands that have a mosaic of microhabitats, including dry pockets, saturated areas, and periodically flooded areas that this species requires. One of the highest priorities in refuge operations is the preservation, enhancement, restoration and management of bog turtle habit and the research and monitoring of bog turtle populations.

In 1997, the Service provided funding to the NJDEP Division of Fish and Wildlife Endangered and Nongame Species Program to assess the refuge wetlands and wetlands along its boundary for their suitability as bog turtle habitat. Out of the 54 sites surveyed, 16 were classified as suitable. Of those 16, only three had the presence of bog turtles confirmed (Sciascia and Tesauro 1997).

In 2000, a follow-up survey was conducted to further investigate the potential and known bog turtle sites that previously had been surveyed. The focus of that study was to better assess the population characteristics of sites with bog turtles, describe vegetation types at known and potential sites, and describe any land use or other threats, primarily at sites within the current refuge boundary. Bog turtles were found at only two of the 53 sites surveyed (Bourque 2000) within the original refuge acquisition boundary. Only one of those sites is on refuge-owned lands.

Between 2002 and 2006, the refuge biologist continued surveys of the one bog turtle site on refuge-owned lands, as well as numerous potential sites within the acquisition boundary. Four turtles were found at one site and marked with radio transmitters. The use of radio telemetry aided in monitoring population trends, detecting signs of recruitment and reproduction, tracking seasonal movements and determining home range.

In 2005 and 2007, Dr. Kurt Buhlmann from the University of Georgia surveyed 15 potential bog turtle sites within the refuge acquisition boundary. No turtles, other than the four at the one known site, were found on any of those sites. Additional turtles were located within the refuge's acquisition boundary, but not on refuge-owned land. After analyzing his data from 2005 and 2007, Dr. Buhlmann will provide the refuge with freshwater turtle management guidance. In addition, he will work with the refuge to analyze further the bog turtle habitats within the refuge and possible bog turtle reintroductions.

Mitchell's Satyr Butterfly

The Service listed the Mitchell's satyr butterfly as an endangered species in 1992. Recently, two well-known sites in Sussex and Warren counties had supported the species. The confirmed sites are both fens located in areas of limestone bedrock in the same watershed, similar to habitats used by the federal-listed threatened bog turtle. Although Mitchell's satyr habitats cannot be so neatly classified, certain attributes at each site remain constant. All historical and active habitats have an herbaceous community, which is dominated by sedges, usually *Carex stricta*, with scattered deciduous and/or coniferous trees, most often *L. laricina* or *Juniperus virginiana* (red cedar). The specific habitat requirements for Mitchell's satyr seem to include structural components as well as the presence of suitable host plants. Butterflies generally use the riparian and floodplain zones for foraging. Females and juveniles will also forage in the canopies of upland trees and over clearings with early successional vegetation (USFWS 1998).

Dwarf Wedgemussel

Potential habitat exists in the Wallkill River for the federal-listed endangered dwarf wedgemussel (*Alasmodonta heterodon*). State biologists conducted surveys for that species in segments of the river running through the refuge in 1999 (Bowers-Altman 2001) and 2001. Those surveys did not detect dwarf wedgemussels or their shells. However, they found numerous stretches of suitable habitat consisting of sandy substrate or sand patches, little to no silt, and slow to moderate current. In addition, the mussel's host fish, the tessellated darter (*Etheostoma olmstedii*), occurs in the river. Further, four freshwater mussel species often associated with dwarf wedgemussel were found. Additional surveys are needed to confirm the presence or absence of this species on the refuge.

Indiana Bat

In 1967, the federal government listed the Indiana bat (*Myotis sodalis*) as endangered because of documented declines in its numbers at seven major hibernacula in the Midwest. At the time of its listing, it numbered around 883,300. Surveys in 2005 numbered populations at 457,374. Although the population is down by about half of what it was in the 1960s, the 2005 number indicates the population has increased or at least has remained stable in most states' hibernacula in 2004 and 2005, resulting in a 16.7-percent increase overall above 2003 population estimates. The 2005 population number is almost where it was in 1990. At the time that the 2005 population numbers were released, however, surveyors did not have an estimated confidence interval, and some changes in methodology occurred from 2003 to 2005.

The refuge first conducted mist net surveys for Indiana bats in August 2008. Surveyors found three Indiana bats, including one post-lactating female and one juvenile, which indicates the presence of a maternity colony nearby. The refuge had previously suspected the presence of Indiana bats, in part because they have been documented in several nearby locations. A maternity colony was found in the summer of 2007 in Wantage, about 2.25 to 4 miles from refuge lands; and since the mid-1990's, Indiana bats have been known to hibernate in three areas near Hibernia, N.J., about 20 miles south of the Wallkill River refuge. Also, the bats' summer focus area—where bats could potentially occur between April 1 and September 30—includes the entire refuge. Furthermore, the refuge provides riparian, forested and upland habitat types typically used by Indiana bats in summer for roosting and foraging.

Our New York Field Office provided a fact sheet describing habitat requirements for this species. We have included some of its highlights.

- Indiana bats typically hibernate in caves and mines during the winter and roost under bark or in tree crevices in the spring, summer, and fall;
- Their roost habitat is characterized by a live or dead tree, ≥ 5 inches d.b.h., with exfoliating or defoliating bark, or containing cracks or crevices accessible to bats;
- Maternity colonies generally use suitable trees ≥ 9 inches d.b.h.;
- Tree structure appears to be more important than a particular tree species or habitat type;
- Streams, floodplain forests, and impounded water bodies provide preferred foraging habitat, and bats may travel 2-5 miles from roost sites to forage; and,
- Other foraging habitat includes forest canopies, open fields, cropland borders and wooded fencerows; and over farm ponds and pastures, all close to tree cover.

The 2007 Indiana Bat Draft Recovery Plan (USFWS) provides additional descriptions of habitat, natural history, threats, and recommendations for recovery across the species' range. This plan can be accessed at <http://nyfo.fws.gov/es/ibatdraft99.pdf>. We will continue to work with our New York and New Jersey field offices to obtain the latest information on where bats are located, and to assess the implications for our refuge management.

Small-Whorled Pogonia

The small-whorled pogonia is a sparse but widely distributed plant that is a member of the orchid family. It was listed as endangered in 1982 and then reclassified as threatened in 1994. The plant's primary range extended from southern Maine and New Hampshire through the Atlantic Seaboard states to northern Georgia and southern Tennessee (USFWS 1992). It occurs in upland sites in mixed-deciduous or mixed-deciduous coniferous forests that are generally in second- or third-growth successional stages (USFWS 1992). Two confirmed extant sites of the plant are in New Jersey, both in Sussex County.

Migratory Birds

More than 225 bird species have been recorded using the refuge. Of those, 122 have been documented as breeding species. The refuge provides habitat especially valuable to migrating waterfowl, wintering raptors, grassland birds, and marsh birds. The refuge is also an important site for wading birds, shorebirds, shrubland-dependent birds, and forest interior songbirds. It also

Wood Duck banding is one of many ways refuge staff study waterfowl.



provides nesting, resting, and feeding habitat for numerous birds on lists of rare and declining species. The refuge maintains an annotated bird species checklist, available upon request from the refuge headquarters. For a complete list of all migratory bird species on the refuge, go to the refuge website, www.fws.gov/northeast/wallkillriver/.

Waterfowl

The Wallkill River Bottomlands are one of the few large areas of high quality waterfowl habitat remaining in northwest New Jersey. In fact, The North American Waterfowl Management Plan Atlantic Coast Joint Venture identifies the Bottomlands as a priority focus area for waterfowl management in New Jersey (Atlantic Coast Joint Venture 1988). The refuge straddles two major migration corridors for waterfowl moving between eastern Canada and the Atlantic Coast and the Delaware River and Hudson River corridors. Waterfowl use both corridors to stop, rest and feed in the extensive wetlands along the Wallkill River, especially when it floods in the spring. In 2005, the Service completed a project in cooperation with Ducks Unlimited to restore, enhance, and manage 335 acres of seasonal wetlands adjacent to the Liberty Loop Nature Trail. That project improved habitat for thousands of migrant ducks and geese as well as a wide diversity of other wetland-dependent wildlife.

Nineteen waterfowl species have been recorded on the refuge. Refuge wetlands are particularly important to migratory American black ducks (*Anas rubripes*). Breeding waterfowl include the Canada goose, wood duck, American black duck, mallard, hooded merganser, and common merganser.

Table 3.9. Annual maxima of waterfowl at the refuge.

Species	Maximum
Snow goose	175
Canada goose	3,000
Mute swan	40
Wood duck	300
American widgeon	50
American black duck	300
Mallard	1,000
Blue-winged teal	50
Northern pintail	300
Green-winged teal	300
Ring-necked duck	10
Ruddy duck	10
Hooded merganser	50
Common merganser	50

Raptors

Grassland on the refuge provides habitat for significant concentrations of wintering raptors, including northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), rough-legged hawk (*B. lagopus*), American kestrel (*Falco sparverius*), and short-eared owl (*Asio flammeus*). The expansive wet meadows near the Liberty Loop Nature Trail are an especially important roosting and foraging site for northern harriers and short-eared owls.

Refuge winter raptor surveys (USFWS 2004, unpublished data) document maxima of 14 northern harriers and 8 short-eared owls. In addition, the refuge red cedar thickets are traditional wintering sites for smaller numbers of long-eared owls (*Asio otus*). Many raptor species nest at the refuge or stop there during migration. In particular, black vultures, osprey, and bald eagles are being spotted with increasing frequency during migration.

Dr. John Smallwood, from Montclair State University, has been monitoring the use of nesting boxes by American kestrels since March 1997. His project, "An Investigation of the Behavioral Ecology and Population Dynamics of Secondary Cavity Nesting Birds in New Jersey," has resulted in the placement of about 300 nest boxes near grasslands in Sussex and Warren counties, N.J., including 29 boxes on the refuge. He has found extensive use of the nest boxes by kestrels and other secondary cavity users such as great crested flycatchers, eastern bluebirds, and tree swallows.

Grassland Birds

The refuge is an important nesting area for grassland birds in New Jersey. Grassland-dependent birds have declined more consistently and over a wider geographic area than any other group of North American birds over the last 30 years (Knopf 1995, Askins 1997, Sauer et al. 1997). The New Jersey Breeding Bird Atlas (Walsh et al. 1999) shows a greater concentration of grassland bird records for the refuge and the Kittatinny Valley than for most other areas of the state. Grassland birds that nest at the refuge include savannah sparrow (*Passerculus sandwichensis*), grasshopper sparrow (*Ammodramus savannarum*), bobolink (*Dolichonyx oryzivorus*), and eastern meadowlark (*Sturnella magna*). Those species also use the 999 acres of refuge grasslands during migration. Grassland dependent birds benefit from our haying/ mowing program, which helps maintain large fields of cool season grasses. These birds also benefit from our efforts to restore diverse warm season grasslands on former cornfields.

From 1995 to 1997, Lamar Gore, a former student trainee at the refuge and graduate student at the University of Massachusetts-Amherst, conducted a 3-year study of grassland birds on the refuge. Titled "Habitat Preference and Management Strategies for Grassland Birds on the Wallkill River National Wildlife Refuge," that research was the first comprehensive evaluation of nesting grassland bird distribution and abundance on the refuge. The report contains recommendations for managing grasslands on the refuge to support nesting grasshopper sparrows, savannah sparrows, and bobolinks. The management of grassland birds should focus on open sites larger than 50 acres.

Refuge staff and volunteers also maintain and monitor approximately 85 bluebird nest boxes near refuge grasslands. Bluebirds occupy about 50 percent of those boxes each year.

Marsh, Wading and Shorebirds

The Kittatinny Valley in which the refuge lies is a stronghold for nesting marsh birds in New Jersey. Many of those are state-listed threatened or special concern species or migratory game birds. Data from the New Jersey Breeding Bird Atlas (Walsh et al. 1999) indicates that disproportionately high numbers of all marsh bird species were recorded in the valley. For example, 37.1 percent of the sora rail records were from this province, although it comprises only 5.3 percent of the state's land area. These secretive species also rest and feed in emergent

marshes on the refuge during migration. The refuge biologist conducts marsh bird callback surveys following established regional protocol.

Many wading birds and shorebirds use the refuge as well. A small great blue heronry is located on the refuge, and the green heron is a common nesting species. Efforts to restore seasonal wetlands adjacent to the Liberty Loop Nature Trail will yield significant benefits for wading birds, and substantially increase opportunities for managing habitat for migrating shorebirds. Killdeer and spotted sandpiper also breed on the refuge. American woodcock (*Scolopax minor*) is a very common breeder and migrant that exploits refuge woodlands, shrub lands, and grasslands. Each year, the refuge biologist conducts woodcock singing ground surveys following established regional protocol.

Shrubland Birds

Birds that nest in shrub lands have suffered the steepest declines in population over the past 30 years of any bird assemblage in the Northeast (Askins 2000). The refuge old fields, thick forest edges, and hedgerows provide nesting and migrating stopover habitat for several declining shrubland species. The refuge is developing a partnership with The Ruffed Grouse Society to help manage shrubland areas for American woodcock and other shrubland-dependent species.

Forest Interior Birds

The refuge preserves many large tracts of unfragmented forest. Consequently, several species of forest interior songbirds nest there. Many of those are Neotropical migrants (birds that winter in Central and South America) that have shown significant declines in population over recent decades (Terborgh 1989, Askins et al. 1990). The refuge also serves as a migratory stopover site for those songbirds and more than 50 species that breed farther to the north.

Mammals

Approximately 40 mammal species appear on the refuge, which is particularly important regionally in providing habitat for bobcat (*Lynx rufus*; state-listed endangered) and black bear (*Ursus americanus*). Those large mammals require the large, unfragmented patches of habitat the refuge preserves. For a complete list of all mammal species on the refuge, go to its website, www.fws.gov/northeast/wallkillriver/.

White-tailed deer, muskrats, and woodchucks (*Marmota monax*) have substantial impacts on refuge habitats and management activities. Populations of white-tailed deer, which are high on the refuge and in the surrounding areas, have negatively affected the structure and composition of plant communities. Consequently, the habitat for many wildlife species has been degraded. The burrowing of muskrats and woodchucks causes extensive damage to refuge dikes. That damage inhibits our capability to manage water levels in impoundments for wetland wildlife.

Several species of bats also appear on the refuge. Since 1998, Dr. Lance Risley from William Patterson University has studied bat populations and bat foraging ecology on the refuge and at other sites in northern New Jersey. Dr. Risley is conducting that research because, although the ecological value of bats as insectivores is well known, their general ecology is poorly understood. Dr. Risley's research will further define the habitat preferences of bats in northern New Jersey by locating and characterizing daily roosting sites in forest preserves. His research takes place between May and August, and involves capturing bats using mist nets, monitoring high-frequency bat vocalizations, and attaching radio transmitters to pregnant female bats to determine the locations of their roosting sites. The bats are released unharmed each night. Three bat species have been captured: little brown bat (*Myotis lucifugus*), big brown bat (*Eptesicus fuscus*), and red bat (*Lasiurus borealis*).

Reptiles and Amphibians

The mixed topography of the refuge yields a wide variety of habitats for reptiles and amphibians, including vernal pools, calcareous fens, rocky woodland slopes, floodplain swamps, emergent marshes, small rocky streams, and open meadows. Consequently, the refuge supports a great diversity of reptiles and amphibians, including several on federal and state lists of rare and declining species. In fact, few areas in northern New Jersey support such a large concentration of species in need of protection.

The refuge protects habitat in one of only two river drainages in New Jersey occupied by the blue-spotted salamander (*Ambystoma laterale*; state-listed endangered). Other state-listed species on the refuge include eastern mud salamander (*Pseudotriton montanus*), longtail salamander (*Eurycea longicauda*), wood turtle (*Clemmys insculpta*; state-listed threatened), northern spring salamander (*Gyrinophilus porphyriticus*), spotted turtle (*C. guttata*), and eastern box turtle (*Terrapene carolina*; state-listed special concern pending). For a complete list of all reptile and amphibian species on the refuge, go to the refuge website www.fws.gov/northeast/wallkillriver/.

The refuge participates in five herpetological surveys: (1) the regional anuran call count survey; (2) vernal pool survey; (3) streamside salamander survey; (4) malformed frog surveys, and (5) surveys for the New Jersey Herptile Atlas.

Since 2000, the refuge has participated in the regional anuran call count surveys. Those surveys are an effective way to determine species occurrence and abundance, the effects of management activities, and the overall health of the habitat. Starting in 2001, the refuge has assisted the U.S. Geological Survey (USGS) Northeast Amphibian Research and Monitoring Initiative in the long-term monitoring of streamside salamanders and vernal pool breeding amphibians. The objectives of that initiative are to determine the status and trends of amphibians in the Northeast for the ultimate goal of conserving amphibian populations and establishing a long-term monitoring program on Department of Interior lands.

One concern is that pesticides from agricultural operations or from mosquito control may be causing deformities in amphibians in the northern part of the country. In 1997 on two sites, and in 1998 on four sites, the refuge conducted preliminary surveys for frog abnormalities. In 1999, our Chesapeake Bay Field Office conducted a comprehensive survey of four sites. Based on that data, a follow-up survey was conducted in 2000. Its results indicate that, although frogs with abnormalities were found on the refuge, there was not enough evidence to suggest these levels were outside the range of natural variability. The study was concluded in this area (Eaton-Poole and Pickney, 2001).

Fish

The segments of the Wallkill River that run through the refuge are classified as non-trout waters. However, the upper stretches of several tributaries are considered trout maintenance waters (capable of supporting stocked trout). Three river tributaries (Franklin Pond Creek, Sparta Glen Brook, and a tributary to the Wallkill in Ogdensburg) support naturally reproducing populations of brook trout (*Salvelinus fontinalis*). Franklin Pond Creek also supports reproducing brown trout (*Salmo trutta*). For a complete list of all fish species on the refuge, go to the refuge website, www.fws.gov/northeast/wallkillriver/.

Stretches of the river on the refuge support a warm water fishery. The results of a fish survey by our Lake Champlain Fish and Wildlife Resources Office on those stretches is available from the refuge office upon request. A table lists common game and panfish and their relative abundance.

Invertebrates

Most invertebrates are poorly documented on the refuge. However, surveys have been completed for dragonflies and damselflies (*Odonata*), butterflies (*Papilionoidea*), mosquitoes (*Culicidae*), and mussels (*Unionacea*) in the Wallkill River.

In 2000, Dr. Allen Barlow, a regionally noted entomologist, documented 65 species of dragonflies and damselflies on the refuge. In fact, the refuge supports one of the most diverse Odonate communities in the Northeast. The most significant of these include the first state sightings of midland clubtail (*Gomphus fraternus*) and skillet clubtail (*Gomus ventricosus*). The refuge maintains an annotated damselfly and dragonfly species checklist, available upon request from the refuge headquarters.



Common Wood Nymph is an easy-to-find butterfly on the refuge.

The refuge provides habitat for diverse butterfly species. In 2001, the regionally rare Milbert's tortoiseshell (*Nymphalis milberti*) was documented on the refuge. In addition, the North American Butterfly Association (NABA) on July 4, 2001, documented the national high count of 1,737 red admirals (*Vanessa atalanta*). Overall, 32 different butterfly species have been recorded on the refuge. The counts are conducted by refuge staff and volunteers. The refuge maintains an annotated butterfly species checklist, available upon request from the refuge headquarters.

The Sussex County Health Department has determined that there are endemic mosquito-borne diseases in the vicinity of the Refuge. The major mosquito-borne disease of concern at Wallkill River refuge is West Nile Virus. Since its discovery in North America in 1999, WNV has spread across the continent, and is considered endemic/enzootic throughout most of the continental U.S. Identification of WNV infected mosquitoes in Sussex County

nearly every year since 2000 indicates that the virus is locally maintained within the wildlife cycle. The Sussex County Office of Mosquito Control (Division) is responsible for monitoring larval and adult mosquitoes on the refuge. The purpose of monitoring is to detect changes in mosquito populations that indicate an increased risk to human or wildlife health. In addition, adult mosquitoes collected from the refuge can be tested for the presence of pathogens. The Division will monitor mosquito populations from April through October. Additional details and restrictions on monitoring and control within refuge boundaries will be described in a mosquito management plan and an annual special use permit.

Four freshwater mussel species were found during surveys for dwarf wedgemussel in stretches of the Wallkill River that pass through the refuge. The eastern lampmussel is a state-listed threatened species and the creeper is a state special concern species (listing pending).

Public Use

Visitor Numbers

The total number of visits to the refuge in fiscal year 2005 was 31,085. Visitor use has been growing each year as more residents and visitors discover the wildlife-dependent public use opportunities available there.

The refuge has an annual average of 483 deer hunters, 149 migratory bird hunters and 120 turkey hunters. The refuge first opened for migratory bird hunting in 2000.

**Priority Wildlife-
Dependent Public Use**

The Wallkill River is accessible by boat at designated canoe access sites. An estimated 1,500 individuals each year observe wildlife on the Wallkill River by canoe. The refuge is also open for fishing, most of which occurs in spring and summer. An estimated 625 people fished on the refuge in fiscal year 2005.

Wallkill River refuge provides hunting, fishing, wildlife observation, wildlife photography, environmental education and interpretation for the public. Wildlife observation is available on the Wood Duck Nature Trail, the Liberty Loop Nature Trail and Dagmar Dale Nature Trail, and by motorized boat, canoe, kayak, or rowboat along the Wallkill River. Fishing and watercraft launch sites are located on the refuge at Oil City Road, Bassett's Bridge and County Route 565. Refuge staff and volunteers occasionally visit local schools, or host scout groups and occasionally lead interpretive walks on the nature trails on the refuge. The refuge is open for fishing along the Wallkill River in accordance with New York and New Jersey fishing regulations, though the refuge does not allow the removal of frogs or turtles. The part of the refuge that lies in New Jersey is also open for all state deer hunting seasons, spring and fall turkey hunting, and all migratory bird hunting except for crows. No hunting is allowed on the part of the refuge in New York State.

The refuge's Wood Duck Nature Trail is a 1.5-mile trail on an abandoned railroad bed. The first 0.6 miles of the trail is hardened to allow barrier-free access. Benches and interpretive signs along the trail facilitate wildlife observation. A new, three-panel information kiosk and five-car parking area are located at the trailhead on Route 565 in Wantage Township. The trail passes through a beaver flowage and wet meadows and ends at the Wallkill River.

The Liberty Loop Nature Trail is a 2.5-mile loop around a grassland/wetland habitat complex. About two-thirds of the Liberty Loop Nature Trail coincides with the Appalachian Trail. The Liberty Loop Nature Trail lacks interpretive signs. In 2001, five benches were added along the trail. A new, six-panel information kiosk and a 10-car parking area are located at the trailhead on Oil City Road in Warwick, New York.

The Dagmar Dale Nature Trail consists of two loops totaling 2.9 miles. The trail traverses deciduous forest and open grasslands before passing by the Wallkill River. The blue trail (north loop) is 1.7 miles long, and the yellow trail (south loop) is 1.2 miles. The trail officially opened on September 23, 2001, at the Refuge Dedication and Open House. All three trails on the refuge were developed and are enhanced by Eagle Scouts and volunteers, who cleared vegetation, built benches and footbridges and installed interpretive signs.

Fishing and canoe access are provided at several refuge locations. A three-panel kiosk and eight-car parking area is located on the Wallkill River at Bassett's Bridge (Route 642) in Wantage Township. A canoe access area is provided at the Wallkill River on Route 565 in Vernon Township. No parking is currently available at this site, but parking is available at the corner of Route 565 and Scenic Lakes Road, a 5-minute walk from the river.

Access to the manmade farm pond at the refuge office has been provided because of two Eagle Scout projects. A bench on the pond dam and two additional benches in a sycamore grove on the other side of the creek leading from the pond were constructed in the fall of 1999. The sycamore grove could serve as a small outdoor classroom for environmental education. Catch and release fishing at the farm pond is allowed.

A comfort station and 41-car parking lot at refuge headquarters was completed in spring 2001. That facility provides parking for visitors to the refuge office, fishing pond, and Dagmar Dale Nature Trail, and for hunters accessing the land behind the maintenance area.

Last, a six-panel kiosk in the parking area and a small one-panel kiosk are located at the refuge headquarters. It currently provides information for visitors arriving outside normal business hours.

In 1997, we completed and approved an environmental assessment for the Visitor Services Program on the Wallkill River refuge. We did not, however, complete a final Visitor Services Plan because of Regional Office guidance pending on developing consistency in those plans. The regional guidance was never issued. The start of the CCP process further delayed the completion of the VS plan. This CCP provides strategic guidance for visitor services programs on the refuge; we will develop a Visitor Services Plan when a visitor services specialist is on staff.

Unauthorized Public Uses

The most pervasive, unauthorized public uses at Wallkill River refuge are illegal dumping, all-terrain vehicle use, trespassing, jogging and dog walking in unauthorized areas. These activities are not currently allowed as they have not been found appropriate or compatible and they could interfere with visitors' participation in priority, wildlife-dependent public uses. On any given day, one or more of these activities are likely to occur. Refuge law enforcement concentrates on managing our authorized hunting program, providing visitor safety on our trails, and monitoring and enforcing refuge regulations against these unauthorized uses.

Chapter 4



USFWS

The Marsh Master is a versatile tool for moving in wet areas on the refuge.

Management Direction and Implementation

- Introduction
- Relating Goals, Objectives and Strategies
- General Refuge Management
- Refuge Goals, Objectives and Strategies

Introduction

This CCP includes an array of management actions that, in our professional judgment, work toward achieving the refuge purposes, the vision and goals for the refuge, and state and regional conservation plans. In our opinion, it will effectively address the key issues. We believe it is reasonable, feasible, and practicable.

In all program areas, this CCP will enhance the quality and sustainability of current resource programs, develop long-range and strategic step-down plans, promote partnerships, and restore grasslands for the species of management concern that are dependent on this habitat type.

Relating Goals, Objectives and Strategies

We presented our goals in chapter 1; this chapter describes them in more detail as objectives and strategies. The relationships among goals, objectives, and strategies follows. Goals are intentionally broad, descriptive statements of the desired future condition of the refuge. By design, they define less quantitatively than prescriptively the targets of our management. They also articulate the principal elements of refuge purposes and our vision statement, and provide a foundation for developing specific management objectives.

Objectives are incremental steps toward achieving a goal; also, they further define the management targets in measurable terms. They also provide the basis for determining more detailed strategies, monitoring refuge accomplishments, and evaluating our success. The Service guidance in “Writing Refuge Management Goals and Objectives: A Handbook” (January 2004) recommends that objectives possess five properties. They should be “SMART”: (1) specific; (2) measurable; (3) achievable; (4) results-oriented; and (5) time-fixed.

A rationale accompanies each objective to explain its context and importance. We will use the objectives in this CCP in writing refuge step-down plans, including its habitat management plan. We will measure our success by how well we achieve those objectives.

For each objective, we developed strategies: specific actions, tools, techniques, or a combination of those that we may use to achieve the objective. In the process of developing refuge step-down plans, we may revise some of the strategies, but most will translate directly into those plans.

General Refuge Management

We primarily developed our management direction hierarchically, from goals to objectives to strategies. We also found, however, that many actions we wanted to highlight either relate to multiple goals or represent general administrative or compliance activities. We present those below.

Refuge Operational Plans (“Step-Down” Plans)

The U.S. Fish and Wildlife Service Manual, Part 602, Chapter 4 (Refuge Planning Policy) lists more than 25 step-down management plans that generally are required on refuges. Those plans “step down” general goals and objectives to specific strategies and implementation schedules. Some require annual revisions; others on a 5- to 10-year schedule. Some require additional NEPA analysis, public involvement, and compatibility determinations before we can implement them.

The following step-down plans are complete and up-to-date:

- Hunt Plan (reviewed annually)
- Sport Fishing Plan (reviewed annually)
- Fire Management Plan
- Zebra Mussel Control Plan

- Safety Plan
- Continuity of Operations Plan
- Chronic Wasting Disease Plan
- Hurricane Plan
- Avian Influenza Response Plan
- Nexus Statement (Law Enforcement area of jurisdiction)

The following step-down management plans are scheduled for completion. That schedule depends on obtaining the staffing and budgets identified in appendixes E and F:

- Mosquito Management Plan (highest priority to complete)
- Habitat Management Plan (second highest priority plan to complete)
- Visitor Services Plan
- Inventory and Monitoring Plan
- Law Enforcement Plan
- Integrated Pest Management Plan (including annual furbearer management program plan)
- Habitat and Species Inventory and Monitoring Plan (HSIMP), within 2 years of CCP approval
- Facilities Plan
- Sign Plan

Active Management of Bog Turtle Sites on the Wallkill River Refuge

The northern population of the bog turtle was federal-listed as a threatened species in 1997. Therefore, this CCP complies with the Endangered Species Act, and provides strategies that will protect and manage land to support our 2001 Bog Turtle Recovery Plan. Also, an intra-Service Section 7 consultation on all actions related to bog turtles was conducted by refuge staff in conjunction with our New Jersey Field Office (appendix H).

One of the greatest threats to bog turtles is the loss of long-lived adults in the wild to a lucrative, illegal wildlife trade (USFWS 2001). Another serious threat is the continued loss, alteration, or fragmentation of the species' highly specialized wetland habitat (USFWS 2001). Strategies in this CCP follow the recommendations in the recovery plan for tasks that will lead to the species' delisting. Those include the following strategies to help achieve the objective for bog turtle management (see refuge goal 1).

- Monitor known bog turtle sites continually to prevent the illegal collection of individual animals.
- Monitor the status of and threats to known sites.
- Survey known, historical, and potential bog turtle habitat.

- Control invasive plants and set back succession by using biological control agents, girdling red maple stems, grazing goats or other livestock, and mowing or mulching.
- Allow beaver ponds to progress through the natural stages of succession and provide potential bog turtle habitat, where beaver populations do not conflict with private landowners or public roads.

Habitat Management Tools

We will use several management tools on varying scales to help maintain, enhance or create wildlife habitat. Those management tools include the following.

- Use prescribed burns to enhance habitat for upland migratory birds, waterfowl, and federally threatened species. Periodic burning of these areas reduces encroaching vegetation.
- Use farmers to hay, mow or graze approximately 500 acres of cool season grassland in order to maintain grassland conditions to support nesting for grassland-dependent birds.
- Remove larger trees and shrubs, making way for contiguous, larger grassland parcels.
- Graze livestock on the refuge's active bog turtle site to control invasive plant species and arrest succession while maintaining the fluid mud substrate preferred by bog turtles.

These and other habitat management tools specified in the CCP will help achieve goal 1 by restoring and enhancing habitats for federal trust species and other species of special management concern.

Non-Indigenous Invasive Plant Species

The Service-adopted policy that defines biological integrity, diversity, and environmental health also provides refuge managers with guidance for ensuring that those elements are maintained and, where appropriate, restored on refuge lands to the extent compatible with refuge purposes (601 FW 3). It states, "The highest measure of biological integrity, diversity and environmental health, is viewed as those intact and self-sustaining habitat and wildlife populations that existed during historic conditions."

The presence and continued expansion of non-indigenous invasive plant species significantly compromises the biological integrity of all habitats. Biological diversity decreases because invasive species out-compete and replace native species. That process yields degraded wildlife habitat and ecosystem function.

Our objective for non-indigenous invasive plants on the refuge is to treat 700 acres of invasive plant species over a period of 10 years, so that those 700 acres will no longer be dominated (<50-percent cover) by invasive species such as purple loosestrife, multiflora rose and Japanese stiltgrass. The strategies we will use to accomplish this objective include the following.

0–5 years after CCP approval:

- Control invasive plants such as purple loosestrife and *Phragmites* by mowing, using biological control, and applying herbicides.
- Continue the annual monitoring of *Galerucella* sp. beetles and *Hylobius* sp. weevils as a biological control agent for controlling purple loosestrife.
- Continue the cooperative study with Cornell University on monitoring the effects of rhizidra larvae as a biological agent for controlling *Phragmites*.

- Continue the Region 5 Invasive Plant Species Inventory and Mapping Initiative.
- Control tree-of-heaven (*Ailanthus*) mechanically and chemically on the refuge.
- Conduct research on biological control agents for use on woolly adelgid invasions on eastern hemlocks and for *Phragmites*.
- Work with utility and pipeline companies to use wildlife-friendly land management techniques such as enhancing habitats for migratory birds and controlling invasive plant species.

5–10 years after CCP approval:

- Develop an Invasive Plant Management Plan to improve the native biological diversity on Service-owned land within the current and expanded refuge boundaries. Include the following components in the Invasive Plant Management Plan.
 - Control invasive plants on habitats containing threatened and endangered species.
 - Emphasize biological control agents whenever feasible.
 - Evaluate control methods (biological, mechanical, prescribed fire, and chemical) before significant new investments occur.
 - Incorporate experimental designs into the plan to test different combinations of treatment types (i.e., spraying and burning plots of *Phragmites*).
- Release biological control agents in eastern hemlocks to control woolly adelgid.
- Focus on mapping and eradicating invasive plant species in Atlantic white cedar swamps due to that habitat's regional significance.
- Evaluate future habitat management projects (e.g., a water drawdown project on bare or open soil) for their potential to facilitate the spread of invasive plants.
- Develop an HMP and a Habitat and Species Inventory and Monitoring Plan with specific strategies for controlling invasive plant species.

Controlling invasive species will help achieve goal 1 by restoring and enhancing habitats for federal trust species and other species of special management concern.

Overabundant Wildlife

The Refuge Manual (7 RM 14.1) sets out Service policy on controlling wildlife and plants in the Refuge System to assure balanced wildlife and fish populations that are consistent with the optimum management of refuge habitat. Control measures become necessary when native or nonnative wildlife populations interfere with our ability to attain refuge objectives or pose a threat to human health.

Canada geese and mute swans can cause severe damage to refuge land by feeding on seedlings, roots and large amounts of vegetation. High numbers of resident Canada geese selectively browsing on moist soil units during the growing season also can degrade habitat quality for subsequent migrant

waterfowl use. The droppings from Canada geese can threaten animal and environmental health by contaminating water.

White-tailed deer often overpopulate due to the abundance of agricultural food sources and the absence of natural predators. Large populations of deer can cause severe damage to refuge trees and shrubs by heavy browsing. Deer also cause damage to crops by feeding on winter and summer plantings.

Beavers have caused flooding on neighboring properties, and muskrats have burrowed into the dikes at Liberty Marsh, threatening to compromise the water control system there. Fox and coyote prey upon birds, reptiles and their eggs, potentially reducing their numbers on the refuge.

Control programs are designed to maintain environmental quality and conserve and protect wildlife resources. The techniques are based on a broad, systematic approach using all the information available on the ecology of the pest animal or plant. Population reduction methods are chosen based on their effectiveness, cost, and minimal ecological disruption.

Our objective for controlling nuisance wildlife is to develop, within 3 years of CCP approval, an integrated Animal Population Management Plan for Service-owned land within the current and expanded refuge boundaries to ensure nuisance wildlife populations stay at levels that do not threaten the viability of federal trust species or other species of special management concern. We will use the following strategies to accomplish that objective.

0–5 years after CCP approval:

- Manage resident Canada goose and white-tailed deer populations through hunting.
- Addle mute swan eggs on the refuge so there is no population increase.
- Manage beaver and muskrat populations, as needed, at the Liberty Marsh property through trapping.
- Provide information to private landowners on techniques to control flooding caused by beavers.
- Use non-lethal means of addressing beaver impacts, to the extent practicable, in areas where they are flooding adjacent landowners or affecting sensitive refuge habitats. Remove problem animals through lethal means when necessary. Trapping will occur only to accomplish specific management objectives.
- Provide technical information annually to adjacent private landowners on methods to discourage resident Canada geese.
- Expand furbearer management program on refuge land, as needed, where sensitive refuge habitats, such as impoundment structures, are impacted.
- If the refuge staff observes signs of predation by fox, coyote or other predators on bird or reptile nests, we will consult scientific literature and subject experts to determine an acceptable level of predation. If predation on those nests rises above identified threshold levels, then the refuge will manage predator populations using legal methods that have proven effective. Those may include trapping and shooting.

Within 5–10 years of CCP approval:

- If the Canada goose population on the refuge exceeds a threshold density to the point where geese are causing damage to refuge habitats, we will obtain the appropriate permits, if required, to reduce the Canada goose population on the refuge by means other than traditional hunting.
- If necessary, eradicate mute swans on the refuge.
- Develop an integrated Animal Population Management Plan.

Managing nuisance wildlife will help achieve goal 1 by restoring and enhancing habitats for federal trust species and other species of special management concern. It will also help achieve goal 3 by providing wildlife-dependent recreation opportunities for hunting and trapping.

Dog Walking

The Service will now allow dog walking on the Liberty Loop Nature Trail, which coincides with the Appalachian Trail (AT) for much of its length through the refuge. The AT, which allows dog walking along the majority of its 2,100-mile length, enters the refuge at the Liberty Loop Nature Trail and follows it for about 1.5 miles. The AT then continues along Oil City Road to where it crosses the Wallkill River, continues on State Line Road and then onto Carnegie Street and reenters the forest.

Findings of Appropriateness and Compatibility Determinations

Federal law and policy provide the direction and planning framework to protect the Refuge System from incompatible or harmful human activities and ensure that Americans can enjoy its lands and waters. The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (Refuge Improvement Act), is the key legislation on managing public uses and compatibility.

Before we can allow any activity or use on a national wildlife refuge, we must determine first that it is an appropriate use. The determination of an appropriate use precedes the analysis of its compatibility. 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.” Wildlife-dependent recreational uses may be authorized on a refuge when they are compatible and not inconsistent with public safety. We may revisit compatibility determinations sooner than their mandatory review date if new information reveals unacceptable impacts or incompatibility with refuge purposes.

The following findings of appropriateness are new; we wrote them as part of this CCP process:

Findings of Appropriateness

- Cross-Country Skiing and Snowshoeing to Promote Priority Public Uses
- Livestock Grazing for Habitat Management
- Motorized and Non-Motorized Boating to Promote Priority Public Uses
- Haying for Habitat Management
- Mosquito Control according to Service Policy
- Research Conducted by Non-Service Personnel

- Furbearer Management to Protect Trust Resources
- Dog Walking on Liberty Loop Nature Trail

We are revising and/or recertifying, the following findings of appropriateness and compatibility determinations as part of this CCP process:

Compatibility Determinations

- Public Hunting for Deer, Turkey and Woodcock
- Public Hunting for Migratory Birds
- Public Fishing
- Wildlife Observation & Photography and Environmental Education and Interpretation
- Cross-Country Skiing and Snowshoeing to Promote Priority Public uses
- Livestock Grazing for Habitat Management
- Motorized and Non-Motorized Boating to Promote Priority Public Uses
- Haying for Habitat Management
- Mosquito Control according to Service Policy
- Research Conducted by Non-Service Personnel
- Furbearer Management to Protect Trust Resources

The following compatibility determinations are new; we wrote them as part of this CCP process.

- Public Hunting for Black Bear
- Dog-Walking on the Liberty Loop Nature Trail

Compatibility determinations help to achieve all goals because they ensure that any use of the refuge does not conflict with its legislated purpose.

Refuge Hours of Operation

To ensure visitor safety and protect refuge resources, the refuge is open one hour before official sunrise to one hour after official sunset. At the refuge manager's discretion, organized night activities, if determined to be compatible, could be allowed under a special use permit.

Hunting at night will not be allowed at the refuge. Opening the refuge to night hunting would create the potential for unsafe encounters between hunters, increase the disturbance of adjacent landowners, and increase the likelihood of poaching and other illegal activities. Those adverse conditions would not contribute to the "quality hunt program" defined in Service policy.

Permitted hunters can access the refuge two hours before sunrise to two hours after sunset.

No Pursuit Hounds, No Game Stocking

Pursuit hounds in support of hunting will not be allowed on the refuge. Hunting areas are small enough that pursuit hounds, and the game they are chasing, could easily venture off the refuge and onto private land. That is especially likely, given the current number of privately owned inholdings within the approved refuge acquisition boundary. In addition, within such small areas, pursuit hounds are likely to detract from the quality of other visitors' wildlife-dependent recreational opportunities, especially those of other hunters.

We will not stock non-native fish or wildlife. Generally, refuge management strives to promote intact, self-sustaining habitats and species populations that existed during historic conditions. We define a "native" species as one that historically occurred within the ecosystem.

In the past, however, the refuge has stocked ponds with native fish for National Fishing Day, and we would continue to do so in the future. We recognize the need to protect the current, native genetic strains of fish. We will not allow the stocking of genetically modified strains. The refuge will work with hatcheries to ensure that the stocked native fish have not been genetically manipulated.

Refuge Law Enforcement

Law Enforcement officers provide protection for refuge wildlife and people visiting the refuge.

The Refuge System and the International Association of Chiefs of Police began working together in 2003 on a law enforcement staffing and deployment model. The goal was to develop a defensible staffing model to quantify law

enforcement resource needs for the Refuge System, help refuge managers deploy law enforcement resources, and justify budget requests. The result was a "Deployment Model for the National Wildlife Refuge System" (International Association of Chiefs of Police), completed in May 2005 and slated for updating every 5 years.



Among other things, the deployment model recommended a law enforcement staff of four full-time officers for the Great Swamp National Wildlife Refuge, which includes the Wallkill River refuge. That

is based on an analysis of 25 separate factors detailed in appendix B of the deployment model.

Refuge Revenue Sharing Payments

We pay one Orange County township and several Sussex County townships a refuge revenue sharing payment based on the acreage and value of refuge land in each jurisdiction. The payments, which are calculated by formula, come primarily from revenues collected by the Refuge System for timber sales and oil and gas leases, etc. Congress may appropriate additional funds. The Service will continue those payments in accordance with the law, commensurate with changes in the appraised market values of refuge land or new appropriations by Congress. The total of those funds is about \$80,000 per year.

Maintenance of Existing Facilities

Periodic maintenance and renovation of existing facilities is necessary to ensure safety and accessibility for refuge staff and visitors. Existing facilities include the Wallkill River refuge headquarters, the large building at Owens Station,

and numerous parking areas, observation platforms, kiosks and trails. Until we make a final determination about environmental education at the building at Owens Station, we will continue our minimal maintenance of that facility. Appendix E displays the fiscal year (FY) 2007 Service Asset Maintenance Management System (SAMMS) database list of backlogged maintenance entries for the refuge.

Refuge Special Use Permits

We will evaluate separately all requests for special use permits for their appropriateness and compatibility. Generally, we approve requests with the potential to provide a benefit to the refuge, once we determine that they are appropriate and compatible. To maintain the natural landscapes of the refuge, we would not allow any proposals for permanent or semi-permanent structures, except under extenuating circumstances unforeseen at this time. Existing approved special use permits will continue.

Wilderness Review

Our wilderness inventory of this refuge determined that no areas meet the eligibility criteria for a Wilderness Study Area as defined by the Wilderness Act. Therefore, we do not need to analyze further the refuge's suitability for wilderness designation (see appendix C). The refuge will undergo another wilderness review in 15 years as part of the next planning process. We will evaluate all newly acquired refuge land that meets Service criteria for their wilderness potential within 2 years of acquiring them.

Mosquito Management

On October 15, 2007, the Service published in the Federal Register its "Draft Mosquito and Mosquito-Borne Disease Management Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997." Until the draft policy is finalized, we will follow the "Interim Guidance for Mosquito Management on National Wildlife Refuges," prepared in spring 2005. This document provides refuges with interim guidance on addressing mosquito-associated health threats in a consistent manner. Like the draft policy, the guidance states that refuges will not conduct mosquito monitoring or control unless it is necessary and compatible to protect the health of a human, wildlife, or domestic animal population. If there is a declared health emergency, the Service will work with local and state mosquito managers to minimize any risks to human health.

The Sussex County Health Department has determined that there are endemic mosquito-borne diseases in the vicinity of the Refuge. The major mosquito-borne disease of concern at Wallkill River refuge is West Nile Virus. Since its discovery in North America in 1999, WNV has spread across the continent, and is considered endemic/enzootic throughout most of the continental U.S. Identification of WNV infected mosquitoes in Sussex County nearly every year since 2000 indicates that the virus is locally maintained within the wildlife cycle.

Based on these findings, the Sussex County Office of Mosquito Control (Division) is responsible for monitoring larval and adult mosquitoes on the refuge. The purpose of monitoring is to detect changes in mosquito populations that indicate an increased risk to human or wildlife health. In addition, adult mosquitoes collected from the refuge can be tested for the presence of pathogens. The Division will monitor mosquito populations from April through October. Additional details and restrictions on monitoring and management within refuge boundaries will be described in a mosquito management plan and an annual special use permit.

Research

The Service will encourage and support research and management studies on refuge land that will improve scientific knowledge and contribute to natural resource management decision-making. The refuge manager will encourage and seek research relative to approved refuge objectives that clearly improves land management and promotes adaptive management. Priority research is

important to the agencies of the Department of the Interior, the U.S. Fish and Wildlife Service, the Refuge System, and state fish and game agencies, because it addresses important management issues or demonstrates techniques for managing species or habitats that will enhance our management of the nation's biological resources.

We will also consider research for other purposes, which may not relate directly to specific refuge objectives, but contributes to the broader enhancement, protection, use, preservation or management of native populations of fish, wildlife, plants, and their natural diversity in the region or flyway. Those proposals must comply with the Service compatibility policy.

Each refuge will maintain a list of research needs that it will provide 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 the use of other facilities, direct staff assistance with the project in collecting data, providing historical records, conducting management treatments, or providing other appropriate assistance.

All researchers on national wildlife refuges, present and future, will be required to submit a detailed research proposal following Service policy in Refuge Manual chapter 4, section 6. The proposals will be prioritized based on need, benefit, compatibility, and funding required. Special use permits must also identify a schedule for annual progress reports, on which we will base our decisions for continued research activities. We will ask our regional refuge biologists, other Service divisions, and state agencies to review and comment on proposals.

Monitoring and Adaptive Management

The Service has adopted the strategy of adaptive management to keep our management of refuges relevant and current through scientific research and management. We acknowledge that our information on species and ecosystems is incomplete, provisional, and subject to change as our knowledge base improves.

Our objectives and strategies must be adaptable in responding to new information and spatial or temporal changes. We will continually evaluate our management actions, both formally and informally, through monitoring or research, to reconsider whether our original assumptions and predictions are still valid. In that way, management becomes an active process of learning what works best. Public understanding and appreciation of the adaptive nature of natural resource management is important.

The refuge manager is responsible for changing management actions or objectives if they do not produce the desired conditions. Significant changes may warrant additional NEPA analysis; minor changes will not, but we will document them in our annual monitoring, project evaluation reports, or annual refuge reports.

We can increase monitoring and research in support of adaptive management generally without additional NEPA analysis. Although we have tried to identify monitoring elements for each objective of this plan, we cannot always predict the subject, scope, and duration of future monitoring.

Managing State-Owned Land

Through a series of agreements signed in 2007, the Service has management authority over about 150 acres of state-owned lands within the original refuge acquisition boundary and about 70 acres outside the original refuge acquisition boundary. We will manage state-owned land in compliance with the policies of the Service and the Refuge System. Lands outside of the refuge boundary will need to be added through the process of a Categorical Exclusion.

**Land Protection and
Refuge Expansion**

We will continue Service acquisition of land from willing sellers within the approved refuge boundary to ensure long-term protection of refuge resources and to maximize the effectiveness and efficiency of refuge administration. We have acquired 5,106 acres within the original refuge acquisition boundary. We will also continue to work with conservation partners to identify important habitats in need of protection and management, and will support our partners' land protection and acquisition.

**Refuge Goals,
Objectives and
Strategies****Introduction**

We designed the following goals, objectives and strategies to enhance the quality, effectiveness, and sustainability of our management priorities. They include an array of management actions that, in our professional judgment, work toward achieving the refuge purposes, vision, and goals, and would make a significant contribution to conserving natural resources in the Kittatinny Valley, where the refuge lies.

The Land Protection Plan expands the refuge's acquisition boundary by 9,550 acres. Of that total, we recommend acquiring 4,763 acres in fee title and 4,585 acres in conservation easements. (Note: Those numbers may not add up to the total acres proposed for acquisition because we based them on a different set of GIS calculations.) The rest of the land we propose to acquire in either fee or easement. As always, the ability of the Service to acquire land depends on the availability of funds; and, the method of acquisition depends on the needs and desires of each willing seller.

The expansion area lies in the Wallkill River Valley, part of the Kittatinny Valley. The Kittatinny Valley lies in Sussex and Warren counties, between the Kittatinny Ridge and the northern extent of the Hudson Highlands. The Wildlife Action Plan (WAP) of the State of New Jersey recognizes the Kittatinny Valley as important for dozens of species in a variety of habitats. Among the species most relevant to the Service are the bald eagle, peregrine falcon, various hawks, bog turtle, wood turtle, dwarf wedgemussel, wood duck, vesper sparrow, arogos skipper, bobolink, grasshopper sparrow, and savannah sparrow. The 9,550 acres is divided among four focus areas: Papakating Creek (7,079 acres), Beaver Run (849 acres), Wallkill Adjoining West (1,092 acres) and Wallkill Adjoining North (530 acres).

The Papakating Creek Focus Area, the largest of the four, encompasses a major tributary to the Wallkill River, and includes significant wetlands associated with bog turtle habitat. Other important habitats in the expansion area include forested and emergent wetlands, large grassland complexes, upland forests, floodplain forests, and farmlands that are regionally important for migratory waterbirds, waterfowl, raptors, grassland birds, and rare reptiles. Rare calcareous wetlands are also present in some of the focus areas. Appendix G, "Land Protection Plan," explains in more detail the contribution of each focus area in protecting wildlife habitat and enhancing the biological integrity of the refuge.

Protecting habitat for trust resources, including by preserving land in northwest New Jersey and southeast New York, is critical and challenging. With real estate values increasing due to migrations of people from the New York metropolitan area, there is an acute need to act quickly to preserve key remaining habitat parcels in Sussex and Orange counties. For that reason, the Service recognizes the need to collaborate with other conservation organizations in the region.

In July 2005, the Service met with representatives from the State of New Jersey, The Nature Conservancy, Trust for Public Land, New Jersey Audubon Society, New Jersey Conservation Foundation, Morris Land Conservancy, as well as municipal, county and state officials to discuss and define the role each agency could play in protecting wildlife habitat in the Kittatinny Valley. Each partner uses its agency's individual mission statement to focus protection efforts. Taken together, those mission statements cover the protection of farmland, threatened and endangered species, scenic areas, grassland habitats, and open space that the local community has identified as significant.

After each agency outlined areas of protection interest on a map, we had identified 61,743 acres worthy of protection in the Kittatinny Valley. As mentioned above, we will focus our limited resources on 9,550 acres of the Wallkill River Valley adjacent to the refuge's original acquisition boundary. Our partners would lead in protecting an additional 52,193 acres in the larger Kittatinny Valley. Only with partners working to preserve the uplands and tributary valleys along the expansion area will the refuge be able to maximize the valley's potential to function as a viable ecosystem.

By adding the four focus areas to its original acquisition boundary, the refuge will become a catalyst for land conservation in the Kittatinny Valley. For the Service to lead this land conservation is appropriate because the acquisition area will further the refuge purposes by preserving and enhancing lands and waters that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations. The wetlands along Beaver Run and Papakating Creek will allow the refuge to conserve and enhance fish and wildlife populations, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds. By re-establishing healthy forests and reducing erosion, sedimentation, and non-point source pollution, the Service will be able to maintain and enhance habitats for migratory birds, fish, and state and federal-listed species. In addition, the opportunities for wildlife-dependent recreation will increase through additional trails, wildlife observation areas, fishing and hunting access points and lands, and interpretation and education. Without that protection, those lands no doubt would no longer support fish and wildlife populations and, by default, would no longer support opportunities for wildlife-dependent recreation.

Expanding the refuge boundary will spur land protection efforts in and around the refuge. Some of our partners focus expressly on helping the Service acquire land within our approved acquisition boundaries. Those partners have a great interest in the expansion area, particularly because the Service has acquired much of the land in its original acquisition boundary: 5,106 acres of the GIS-calculated 7,100-acre original acquisition boundary. The county farmland protection program owns and protects an additional 590 acres of land within the refuge's original acquisition boundary. New Jersey's Green Acres owns and protects 175 acres. That leaves only 1,245 acres unprotected in the original acquisition boundary.

Much of the land in the expansion area is used for private agriculture or woodlots, or functions as early successional habitat associated with previous agriculture and silviculture. Although we will assess each opportunity on its merits at the time, many private land owners within the expansion area have shown interest in selling all or part of their property. In almost all cases, lands sold to the Service by willing sellers will be turned over to the Service in full or via management rights. In that way, the Service and many organizations in the conservation field will gain significant cost savings.

The Papakating Creek Focus Area is the most significant of the focus areas. The creek, a major tributary of the river, heads generally westward from the Wallkill River, winding through farmland, forest, and a few small developments before dispersing along the Kittatinny Ridge and its state-protected land. Primary among the benefits of the expansion for wildlife, wildlife habitats, and the region would be the establishment of a preserved corridor running from the Kittatinny Ridge to the Hudson Highlands. The original refuge acquisition boundary borders the Hudson Highlands' western edge. Such an uninterrupted band of land exists nowhere else in New Jersey; it presents the last opportunity to create this kind of preserved set of wildlife corridors. With a band of natural habitats spanning the Kittatinny Valley, species will be able to better migrate from the large population production areas of the Allegheny Plateau, which extends across Pennsylvania and New York, to the more developed and isolated natural lands of the Hudson Highlands and the igneous (largely undeveloped) ridges of northern New Jersey.

With the growing understanding of the importance of corridors for the flow of individual animals as well as entire animal populations, this expansion area represents a prime opportunity to strengthen wildlife populations at the edge of the New York metropolitan area. Through the establishment, management and maintenance of this corridor, the Service will help support populations of forest and wetland migratory birds, larger mammals, and reptiles and amphibians. Many of the species identified in the New Jersey WAP, such as northern harriers, wood turtles and bobcats, will benefit from the refuge expansion. Maintaining those species and habitats will help offset some of the less desirable effects of species that may overpopulate, such as coyotes and deer, despite the fragmented, low-quality wildlife habitats of the region. The Papakating Creek also supports a warm-water fishery, and the upper tributaries could support native brook trout populations.

Most of the land in the focus areas contains the same habitat types as those found in the refuge's original acquisition boundary. Our management objectives address these habitat types: namely, forested and non-forested wetlands, upland forest, grassland habitat and scrub-shrub habitat. One of our highest priority habitat projects will be to restore forested and non-forested wetlands. Over the past couple centuries, many of the wetlands around the Wallkill River have been deforested, drained, ditched, and converted to agricultural fields. In the CCP we use ditch plugging as a low-cost, low-maintenance tool for restoring wetlands.

The refuge will also give priority to managing for early successional and grassland habitat conservation. We will focus limited resources on providing high quality, sustainable, and reasonably manageable grassland habitat on three priority, large (>150-acre) grassland complexes. Smaller grassland fields across the refuge that formerly were managed would not be maintained, unless needed to support an administrative or priority public use. Those fields will likely revert to shrub habitat over the next 15 years.

Under this CCP, we will identify, map and field-survey all suitable bog turtle sites, develop a site management and monitoring plan for potential sites, and start experimenting with different habitat management techniques on current sites. We will also begin surveying for other listed species that may occupy certain habitat types.

We predict visitation to the refuge will increase by 15 percent under this CCP, because public use opportunities will increase. We will expand the hunting opportunities to include bear hunting, and improve the quality of interpretive materials at existing trails. The Wood Duck Nature Trail will be expanded,

providing additional opportunities for wildlife observation, photography, and interpretation. Map 4-2 illustrates the proposed public use strategies.

Because the habitat types in the original acquisition boundary and the expansion area are similar, we calculated and mapped projected habitat types for the original acquisition boundary, and used those same calculations for habitat type projections in the expansion boundary. For example, we project that both the original acquisition boundary and the expansion boundary will have 33 percent of their total acres in forested wetland habitat. We did not, however, have the resources to map projected habitat types for the entire 9,550-acre expansion area; therefore, Map 4-1 shows projected habitat types for the original acquisition boundary and actual habitat types for the newly expanded boundary.

Following are the goals, objectives and strategies for the Wallkill River refuge.

GOAL 1:

Protect and enhance habitats for federal trust species and other species of special management concern, with particular emphasis on migratory birds and bog turtles.

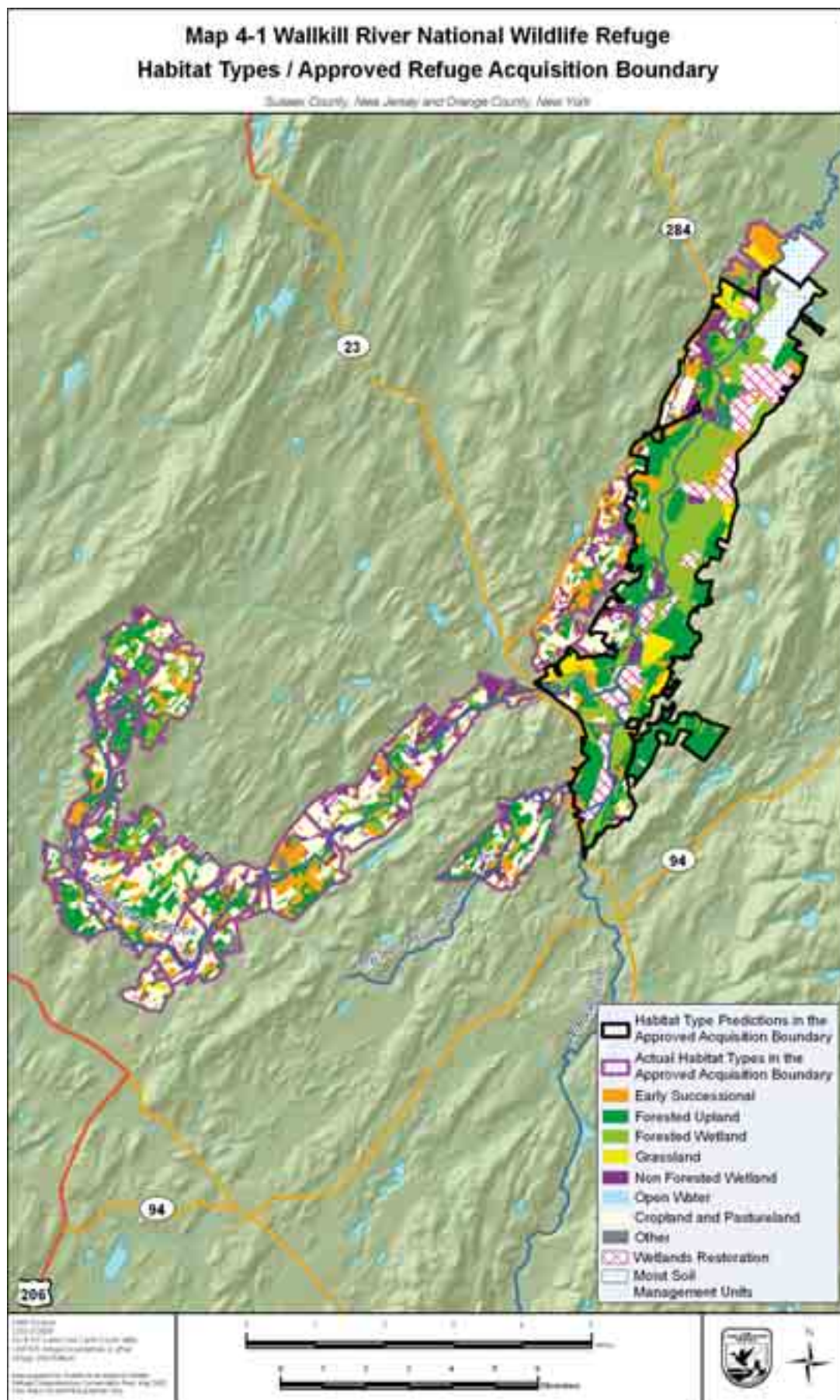
Objective 1.1 (Scrub-Shrub Habitat)

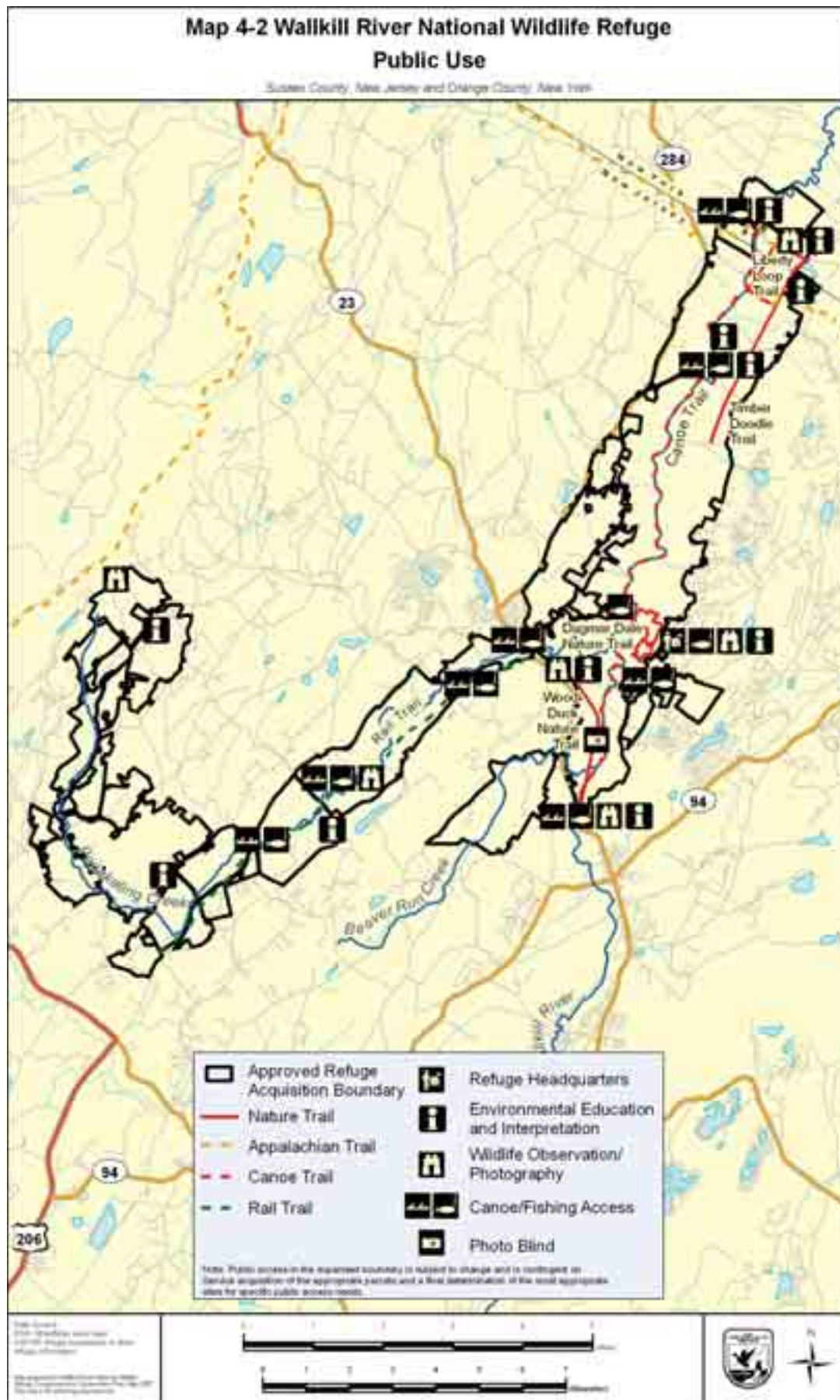
Within 10 to 15 years of CCP approval, actively maintain a rotational mosaic of 1,708 acres in scrub-shrub habitat within the 17,050-acre approved refuge acquisition boundary to provide habitat for shrub nesting land birds of concern, such as the golden winged warbler, prairie warbler, field sparrow, eastern towhee, gray catbird (Dettmers 2000) and woodcock. Depending on the spatial characteristics of the land, some scrub-shrub parcels will total less than 10 acres in size.

Rationale

The Wallkill River refuge is located in one of the more unforested landscapes in the Northern Ridge and Valley physiographic area, made up of the Kittatinny Ridge to the west, the Hudson Highlands to the east, and the Kittatinny Valley in the middle. Much of the land already managed or protected in this physiographic area is forestland. Therefore, the refuge holds a unique position of being a large tract of public land with non-forested habitats that we could manage for grassland or shrub land birds, and lies within a landscape that has a significant proportion of open land where it makes ecological sense to manage for those types of species (Dettmers 2000). There has been a shift in focus from grassland management to scrub-shrub habitat in refuges in the east. This is due in part to a report on grassland bird breeding use of managed grasslands on National Wildlife Refuges within Region 5 (Runge et. al., 2004), which did not list Mid-Atlantic Coastal Plan refuges as the ideal place for grassland birds. Grassland species were a focus at one time in the east because of the amount of abandoned agricultural land that has the potential to be managed for grassland birds. Recently, however, due to southern New Jersey's questionable matrix of habitats for grassland birds, the Grassland Study Preliminary Report recognizes scrub-shrub habitat as increasingly more important. Factors such as topography, habitat, soils, and surrounding upland forest make conditions at Wallkill better suited for scrub-shrub and forest interior-dependent species.

The refuge also lies within Bird Conservation Area 17, as defined by the PIF Bird Conservation Plan (Rosenberg 2003). This plan also identifies shrub-scrub habitat as high priority because of its importance to breeding populations of golden-winged warblers, but also because many other shrub land species have undergone significant population declines in this physiographic area (Dettmers 2000). The Area 17 targets for shrub land acres and bird populations are considerably higher than are those for the grassland suite, so it will be more difficult for the refuge to make as large a contribution to the PIF goals. The PIF





*Scrub-shrub habitat
often grows in former
grasslands.*



USFWS

plan calls for 71,000 ha (175,500 ac) of shrub land habitat to support the entire suite of birds using this habitat. However, although the refuge may not be able to make a large contribution to the overall PIF goal for this habitat-suite, some management for shrub land birds could fit rather easily into the overall plans and spatial configuration of habitats on Service-owned land, within the current and expanded refuge boundaries.

Within the refuge boundary, we will allow grassland and scrub-shrub habitats along the 100-meter riparian corridor of the Wallkill River to succeed to forest. We will maintain as scrub-shrub habitat the areas outside that corridor with substantial populations of scrub-shrub-dependent birds. Most birds that depend on shrub land do not require as large and as contiguous patches of appropriate habitat as many of the high-priority grassland- and woodland-dependent birds. Most of the shrubland species readily use small (2- to 5-acre) patches of scrub-shrub forest habitat. If we allow the small fields that would not be very beneficial for grassland birds on the refuge to continue their succession, they will make good habitat for shrub land birds. We will manage a complex of those small fields on a longer rotational basis to provide a variety of scrub-shrub habitats. The refuge will also make a greater effort to establish scrub-shrub habitat if golden-winged warblers are breeding on or near its land. This species is one of the highest-priority species, and if it is breeding in the area, the refuge could potentially provide good habitat for it. The PIF plan considers managing for this species as high priority wherever it is feasible. Golden-winged warbler territories have been described as having thick, brushy habitat interspersed with patches of relatively open, herbaceous vegetation (grasses or sedges), often with a forested edge or perimeter. Nests are often located along field-forest edges where brushy and herbaceous patches meet. Some of this type of habitat already exists on currently owned refuge land. By allowing some small fields to succeed, we could provide more of that type of habitat on Service-owned lands.

The New Jersey WAP also identifies golden-winged warbler and woodcock as important species to manage for in this area of the state. The state hopes to increase and stabilize population numbers for both these species of scrub-shrub-dependent birds.

Strategies

- Continue to acquire from willing sellers 100 acres of scrub-shrub habitat still in private ownership within the original refuge acquisition boundary and manage according to objective 1.1 (above).
- Allow natural succession to occur on existing grasslands less than 40 acres in size.
- Conduct annual woodcock surveys refuge-wide.
- Continue partnership with the Ruffed Grouse Society to maintain scrub-shrub habitat.
- When habitat measurements indicate succession has caused a degradation of quality scrub-shrub habitat, the refuge staff will use prescribed fire, mowing or other appropriate action to maintain habitat quality.

Within 5 years of CCP approval:

- Manage a total of 730 acres of land within the original approved acquisition boundary as scrub-shrub habitat.
- Inventory and map all existing scrub-shrub habitats >2 acres.
- Conduct bird surveys of scrub-shrub habitats to determine which species are using these habitats. Determine whether golden-winged warblers, a high-priority species within the PIF plan and the New Jersey WAP, are breeding on or near refuge land. If found, we would likely tailor scrub-shrub management strategies towards the golden winged warbler in some areas of the refuge.
- Convene a group of specialists to evaluate each shrub-scrub habitat field and determine which fields could be effectively managed over the long-term to benefit focus species, such as those mentioned in the objective above.

Within 15 years of CCP approval:

- Determine which of the existing shrub-scrub fields (less than 25 acres) we will allow to grow into mature forest, and which we will manage on a 10- to 15-year rotation (or, once the height of the prevalent vegetation reaches 10 feet). In general, we will allow small fields within the 100-meter floodplain of the Wallkill River to succeed to forested habitat in order to establish the floodplain forest. For the fields that will remain as shrub-scrub, we will use accepted management practices such as mechanical control, management ignited prescribed fire, livestock grazing, and herbicides to maintain fields in desired vegetated stages.
- Incorporate plans for shrubland habitat management into a larger Habitat Management Plan (HMP). Establish shrubland management areas in the HMP.
- Acquire from willing sellers 978 acres within the expansion area and manage fee land as scrub-shrub habitat.

Objective 1.2 (Non-Forested Wetlands)

Manage 3,324 acres of non-forested wetland habitat within the 17,050-acre approved refuge acquisition boundary, including 335 acres of moist soil units at Liberty Marsh, to provide spring and fall migratory waterfowl habitat for species such as black duck, wood duck, mallard and green-winged teal; to provide shorebird habitat for species such as greater and lesser yellowlegs and spotted

Kevin Holcomb



Non-forested wetlands on the refuge provide stopover habitat for many migratory birds.

sandpiper; and, to provide wintering raptor foraging habitat for species such as short-eared owls, northern harrier and rough-legged hawk.

Rationale

The refuge falls within the Atlantic Coast Joint Venture (ACJV) Northern New Jersey Limestone Focus Area. That area is centered on valuable inland freshwater wetlands of Northwestern New Jersey stretching southeast of the Kittatinny Mountains into Warren and Sussex counties. These wetlands in the northeastern section of the focus area drain into the Hudson River Drainage Basin via the Wallkill River. According to the New Jersey Governor's Skyland Greenway Task Force, the Upper Wallkill River Valley is considered crucial land, and the New Jersey State Natural

Heritage Program has identified several areas (most of which are wetlands) within the focus area as a Priority Site for Biodiversity. Waterfowl such as the Atlantic population Canada goose, American black duck, mallard, wood duck, hooded merganser, and the common merganser use the focus area in breeding, migrating and wintering. Additional migratory birds of significance are the common snipe (whose limited breeding sites include the Wallkill River), more than 170 species of passerines, and several nests of bald eagle pairs (ACJV-Focus Area Report Draft quoting Walsh et al. 1999). In addition, the New Jersey WAP identifies non-forested wetland habitat in this area as important for increasing and stabilizing the populations of four state-listed endangered species and three state-listed threatened species. The endangered species include the American bittern, Northern harrier, pied-billed grebe and sedge wren. The threatened species include the black-crowned night heron, osprey, and long-tailed salamander.

We will continue to manage 335 acres of freshwater impoundments at Liberty Marsh. Depending on the results of the impoundment study, the refuge may convert additional non-forested wetlands within the 17,050-acre approved acquisition boundary to moist soil management units. The acreage and location of habitats may vary somewhat each year, depending on wetland dynamics, vegetation management, and successional changes in each wetland. The primary effort within impoundments will be to provide productive annual vegetation communities to meet the feeding requirements for a variety of shorebirds and waterfowl that depend on this habitat. At Liberty Marsh, this means that for 3 to 4 weeks during the peak migration times in the spring and fall, the refuge staff will flood those impoundments, after which drawdowns will allow vegetative reproduction in the summer. Recent management actions, however, have revealed that the soils in Liberty Marsh may be unable to retain water for extended periods. For that reason, holding water in these impoundments for extended periods makes them ineffective. Therefore, the refuge is reconsidering the value of impoundments in its management goals.

We will base the decision to convert wetlands to moist soil management units on a set of criteria laid out in the strategies below. We will try to avoid duplicating habitat composition that occurs in natural wetlands outside the impoundment system. Moist soil management units are highly managed systems, and require significant amounts of staff time and maintenance to oversee water level manipulation and vegetation control.

We will consider restoring other wetlands to a more natural drainage regime. Many areas along the Wallkill River and its tributaries have been used extensively for agriculture for the past two centuries. If the Service were to acquire lands that are no longer being used for agriculture, we could increase their benefit to migratory birds and fish by removing dikes and plugging drainage ditches. The return of more natural water flows can reduce the prevalence of invasive species. Often, those areas require little active management. See Goal 2, Objective 2.1 for specific strategies related to wetland restoration.

Strategies

- Continue to acquire from willing sellers 523 acres of non-forested wetland habitat still in private ownership within the original refuge acquisition boundary and manage similar to land under objective 1.2.
- Continue to manage water levels in seven impoundments at Liberty Marsh and record weekly gauge readings. Use drawdown, flooding, soil manipulation and other techniques to provide quality habitats at appropriate times to meet the migration chronology of the wildlife in the objective. We will manage the habitats as a combination of 18- to 36-inch shallow water habitat (about 75 acres) for waterfowl such as common mergansers, 3- to 18-inch shallow water habitat (about 125 acres) for species such as black duck, and mudflat habitat (about 130 acres) for shorebirds such as sandpipers.
- Continue to participate in the Regional Impoundment study and follow-up from 2005-2008. Based on the results of this study, we will implement adaptive management strategies in the refuge impoundment system. Participate in future wetland management studies in order to continue refinement of refuge management practices. Physical and structural limitations of the impoundments will play a role in how the refuge will manage them.
- Continue to conduct waterfowl and shorebird surveys to evaluate response to management.

Within 15 years of CCP approval:

- Manage a total of 1,420 acres within the original refuge acquisition boundary as non-forested wetland habitat.
- Acquire from willing sellers 1,904 acres within the expansion area, and manage fee land as non-forested wetland habitat according to objective 1.2 above.
- Use the following criteria to determine whether newly-acquired non-forested wetlands would qualify for conversion into moist soil management units and, therefore, would be managed similarly to Liberty Marsh, as stated in the rationale above. We expect that new impoundments would be managed in a similar proportion and in a similar way to our current impoundments.
 - The area must be located near a direct water source (creek, river, runoff or some other water source).
 - The area must be located in a low area in relation to the water source so gravity can work with the water control structure to adjust water levels for the spring and fall bird migrations.
 - The area ideally would be deforested when the Service acquires it.
 - The site must contain soils suitable for holding water for moderate to extended periods.
 - Berms, dikes or other impediments to water flow should be preexisting.

- Evaluate waterways within the refuge to determine whether excessive erosion is occurring. Develop restoration plans if the erosion falls outside the range of natural variability.
- Evaluate areas that have been drained, ditched, and diked along the Wallkill River and its tributaries for restoration to more natural drainage patterns.

Objective 1.3 (Grassland Habitat)

Within 10 to 15 years of CCP approval, refuge staff will manage a mosaic of 1,382 acres of grassland habitat within the 17,050-acre approved refuge acquisition boundary for bobolink, grasshopper sparrow and savannah sparrow, including three grassland focus areas of at least 100 acres each within the original refuge acquisition boundary, and additional parcels >100 acres likely to be identified and managed within the expansion area. Half the total acreage would be managed as short, sparse grassland (<50 cm tall; <75-percent vegetative cover) to provide habitat for grasshopper sparrows and the other half would be managed as medium height, dense grassland (50–100 cm tall; 75–95-percent vegetative cover) to provide habitat for bobolink. Both types of grassland would also support savannah sparrows.

Rationale

As stated above in objective 1.1, the refuge holds a unique position of being a large tract of public land with non-forested habitats that we could manage for grassland or shrub land birds. Although scrub-shrub-dependent birds are a higher priority than are grassland birds in many of the regional bird conservation plans, and although the refuge cannot provide the quantity and quality of grassland habitat that refuges to the north and south are able to, the Wallkill River refuge can still play a role in providing habitat for grassland-dependent birds.

For the grassland habitat suite, the PIF Bird Conservation Plan for Area 17 focuses on setting objectives for bobolinks, grasshopper sparrows, and upland sandpipers. The New Jersey WAP also identifies those three bird species as state-listed (threatened). We use bobolinks as a grassland generalist, and assume that, if sufficient habitat is provided for this species, then many of the other species in this habitat suite also will be provided for. Grasshopper sparrows and upland sandpipers are two more specialists, so we set specific objectives for them. Grasshopper sparrows require larger patches of grassland with fairly short and sparse vegetation. Upland sandpipers have the largest area requirements of all the grassland birds, and need a mixture of both tall and short grasses. Therefore, managing for upland sandpipers is not a realistic goal at the refuge. Instead, the refuge will focus its grassland management goals on bobolinks, grasshopper sparrows, and savannah sparrows. A 3-year study of grassland birds at the Wallkill River refuge also recommended managing for those three bird species (Gore 1998).

In his report on how the Wallkill River refuge can best contribute to PIF objectives, Dettmers (2000) suggested as a reasonable short-term goal (5–8 years) that the refuge support 1 percent of the target population/acres for the three grassland birds mentioned above within the original refuge acquisition boundary. For bobolinks, the PIF Area 17 goals are 13,000 ha of grassland to support 12,000 pairs. One percent of 12,000 pairs is 120 pairs; 1 percent of 13,000 ha is 130 ha (320 acres). Dettmers suggested a long-term goal (10–15 years) for the refuge would be to double these numbers and support about 250 pairs of bobolinks with 650 acres devoted to management for grassland birds within the original refuge acquisition boundary. The assumption being that within those 650 acres, the population objectives for bobolinks, grasshopper sparrows, and savannah sparrow could also be met. About half of those acres should be managed specifically to support 1 percent of the Area 17 grasshopper sparrow objectives, or 45 pairs of grasshopper sparrows, and 160 acres managed for the short-term

goal, and 90 pairs and 300 to 350 acres managed for the long-term goal. Savannah sparrows are sufficiently general in their habitat needs that the acres managed for grasshopper sparrows and bobolinks should be sufficient to achieve the target numbers. See table 4.2 below for a summary of recommendations for grassland management on the refuge. Management for all of these species should focus in fields that are at least 50 acres in size, with larger being better. As mentioned in the grassland objective, the refuge will manage three grassland focus areas of 100 acres or more, while allowing grassland fields smaller than 100 acres to succeed to shrub-scrub habitat, as mentioned in objective 1.1.

We used the recommendations above as a guideline for setting the objectives for grassland habitat management in the original refuge acquisition boundary. We would use the same guidelines as the Service acquires land in the expansion boundary.

Table 4.1. Summary of recommendations for Wallkill River refuge grassland management.

Species	Short-term Goals (5–8 years)		Long-term Goals (10–15 years)	
	Population goal	Acreage goal	Population goal	Acreage goal
Bobolink	120 pairs	320 ac	250 pairs	650 ac
Savannah Sparrow	87 pairs		150 pairs	
Grasshopper Sparrow	45 pairs	160 ac (of 320)	90 pairs	300-350 ac (of 650)

Strategies

- Continue to acquire from willing sellers 23 acres of this cover type still in private ownership within the original refuge acquisition boundary and manage according to objective 1.3 above.
- Continue mowing, haying, prescribed burns, herbicides, and livestock grazing as grassland maintenance tools.
- When agricultural fields >50 acres in size are acquired, maintain by mowing and haying or restore to warm season native grasslands.
- Each year, maintain the 50-acre, early-successional cool season grassland on Tract 43 to provide nesting habitat for bobolinks.
- Exchange information with local farmers on Best Management Practices for land within the acquisition boundary, such as grazing fields on a rotational basis, herbicide application and prescribed fire.
- Continue annual breeding grassland bird surveys following Regional protocol to help assess larger-scale population and other trends.
- Continue annual mid-winter raptor surveys.

Within 5 years of CCP approval:

- Within the original refuge acquisition boundary, manage a total of 590 acres of grassland habitat divided into three grassland focus areas. Apply a rotational treatment schedule every 1 to 5 years, depending on site characteristics, which will create a variety of successional stages and vegetation diversity. Treatments would include haying and mowing, igniting management-

prescribed fire, applying herbicides, and grazing livestock. Large fields (≥ 100 acres) could be divided in half or thirds, with each section managed on a rotational basis. Smaller fields (50–100 acres) could be managed as a complex, especially if they are close to each other. Use Mitchell's Grasslands Report for overall strategy as to grass species/structure/etc. (Mitchell 2000).

- Establish criteria and monitor effectiveness of haying and grazing to ensure these operations benefit nesting or wintering grassland-dependent bird habitat as defined by Mitchell (USFWS 2000).
- Consult with NRCS when planting native grasses to ensure the selected species will grow well under the soil type and moisture conditions of a given field. Contact grassland bird experts about the value of grass species to wildlife.
- Annually conduct breeding and wintering grassland-dependent bird surveys, documenting the use of different successional stages by nesting and wintering grassland birds. Identify vegetation parameters that will be monitored along with bird response. Use this information to adjust habitat management techniques on grassland.
- Incorporate plans for grassland management into the larger Habitat Management Plan (HMP).

Within 10–15 years of CCP approval:

- Acquire from willing sellers 791 acres within the expansion area and manage land acquired in fee as grassland habitat according to objective 1.3 above.
- Create grassland focus areas in the expansion area where appropriate conditions exist. Some of the criteria we will use for deciding whether future land would be appropriate for inclusion in grassland focus areas include the following:
 - Several old fields that are adjacent or close to each other, and total at least 50 acres.
 - Fields that contain soils that are conducive to growing grassland plant species for the target bird species mentioned above.
 - Fields that refuge staff can access easily for management purposes.
 - Fields that have a site history conducive to grassland plant species.
- Two areas within the Papakating Creek Focus Area that could fit the above criteria are at the intersections of Plains Road, Meyer Road and Davis Road, continuing in each direction along Plains Road, and at Klimans Road and Route 519.
- Work with neighboring landowners to promote privately-owned grasslands that will benefit grassland species of conservation concern.
- Initiate a study on tracts 15b and 79a (26 acres) to assess the effectiveness of livestock grazing to maintain nesting grassland bird habitat and reduce the percent cover of invasive plant species such as purple loosestrife and multi-flora rose.

- Develop a Habitat Management Plan (HMP) and a Monitoring and Inventory Plan, emphasizing grassland to maintain the existing diversity of nesting and wintering grassland birds.

Objective 1.4 (Forested Communities)

Sustain 9,761 acres of forested wetlands and uplands within the 17,050-acre approved refuge acquisition boundary to maintain overall habitat diversity in Sussex County. Approximately 5,474 acres would be maintained as palustrine, mature (80+ years) deciduous floodplain forest and 4,286 acres in mixed upland forest, both in habitat patches over 100 acres, to support a suite of nesting interior forested land birds of concern, such as cerulean warbler, worm eating warbler, wood thrush, eastern wood peewee, Baltimore oriole, Louisiana water thrush, Kentucky warbler, and scarlet tanager.

Rationale

The PIF Bird Conservation Plan for Area 17 calls for almost 2.5 million acres of mature hardwood forest to support mature forest habitat-species suite in Area 17 (Rosenberg 2003); however, because mature hardwood forest is the top conservation priority in Area 17, any contributions to the overall conservation goals for this habitat are significant. Many of the refuge's forested uplands connect to the larger blocks of forest covering the surrounding uplands. Within these upland forests, with their more fertile soils and gentler slopes, mature trees often will have greater height, health and biomass. Many migratory bird species such as red-eyed vireo and rufous-sided towhee will use those habitats. Vernal pools are an important component of those areas, and the refuge has more than 25 of those sites. Salamanders, frogs and toads all use them.

With much of the forestland in this physiographic area occurring on ridges, bottomland forests are a rare commodity (Dettmers 2000). Managing for forested bottomland corridors along the Wallkill River and its tributaries would constitute a significant contribution to the overall goals for Area 17, especially with a focus on cerulean warblers and Louisiana water thrushes. Cerulean warblers will occupy late succession bottomland forests, especially those with sycamore as a prominent component. Water thrushes require late successional hardwood forests along rocky, flowing streams. Both species are more common in larger patches of forest. Forest bottomlands and riparian corridors also would benefit most of the other high-priority species in this suite. Wood thrushes and Baltimore orioles, in particular, will readily occupy those habitats. Pewees and scarlet tanagers will also use them.

Connecting and consolidating existing large blocks of mature forest wherever possible will also benefit the suite of bird species mentioned above. Whether more active management of existing forestland would be needed depends on its condition. Many of the priority mature forest species prefer late successional woodlands with small gaps scattered throughout. The gaps create structural vegetation diversity that these birds require or at least prefer. Even-aged forests that are densely stocked and have little horizontal diversity in their vegetation layers will not support as many species or individuals as a forest with well-developed layers of understory, mid-story, and canopy. Selective cutting could be used to create small gaps if the existing woods lack sufficient structural diversity.

Large blocks of forested habitat would also benefit the state-listed threatened and endangered species identified in the New Jersey WAP. The state-listed endangered species include the Allegheny woodrat, bobcat, northern goshawk, red-shouldered hawk, and timber rattlesnake. The state-listed threatened species in this area include the barred owl, Cooper's hawk, long-eared owl, red-headed woodpecker, and wood turtle. New York's Comprehensive Wildlife Conservation Strategy (CWCS) identified the Shawangunk mountain range, located northwest of the refuge, as containing forested habitats that are

important migratory corridors for raptors and other migratory birds. Those habitats contain a forest matrix of chestnut-oak forest (chestnut oak, red oak), hemlock, northern hardwood forest, and pitch pine-oak heath rocky summit interspersed with vernal pool and wetland habitat.

Strategies

- Continue to acquire from willing sellers 356 acres of forested wetland habitat and 439 acres of upland forested habitat still in private ownership within the original refuge acquisition boundary and manage according to the strategies below.
- Allow natural succession to occur in existing forested communities.
- Continue annual land bird surveys following Regional protocol in the forested habitats of the refuge.
- Continue long-term monitoring of the refuge's 26 or more vernal pools and their associated amphibian populations. This monitoring effort is part of the USGS "Amphibian Research and Monitoring Initiative." That region-wide study aims at determining the regional distribution of vernal pools in parks and refuges in the northeast.

Within 5 years of CCP approval:

- Within the original refuge acquisition boundary, manage a total of 2,339 acres of forested wetland habitat and 1,831 acres of forested upland habitat.
- Map and inventory stand conditions in all mature deciduous forested stands greater than 10 acres. Identify core patches (>100 acres) of forest and options to increase the size of these core patches by allowing small fields to revert to forest.
- Where appropriate, increase the connectivity of core forest patches by creating forested travel corridors between them.
- Begin to establish and manage a minimum 100-meter mature forested riparian corridor on both sides of the Wallkill River. That corridor will comprise silver maple, eastern cottonwood, ash, black willow, sycamore, pin oak, river birch, and elm. Land may be exempt that makes up parts of the three grassland focus areas, the moist soil management units (see objectives above) or threatened and endangered species habitat.
- Monitor hemlock woolly adelgid outbreaks on the refuge and implement control methods when impacts are outside the range of natural variability. Monitor the occurrence of objective land bird species (Louisiana water thrush and cerulean warbler), and relate species occurrence to habitat conditions. Use that information to guide future decisions about forest management to improve forest contributions to these species.

Within 15 years of CCP approval:

- Develop an HMP and Monitoring and Inventory Plan for refuge land to maximize forest health and support mature (>80-year-old) forest-dependent species on the existing refuge forest. Use the PIF plan (Area 17) mature forested bird priorities and recommended management techniques. Also, look for upland species identified in the New Jersey WAP that would benefit from joint management on that land. A few areas in the Papakating Creek expansion area are good candidates for that, including the area around Roy Road, and numerous corridors around Armstrong Bog and along Gunn Road.

- Incorporate the Atlantic white cedar swamp into the HMP.
- Acquire from willing sellers 5,590 acres within the expansion area. Manage 3,135 acres of fee land as forested wetland and 2,455 acres as forested upland. Identify upland forest tracts with significant ecological connections with other preserved tracts around the refuge. Also, identify core patches (>100 acres) of forest and options to increase their size by allowing small fields to revert to forest. A few areas in the Papakating Creek Focus Area fit those criteria: the Armstrong Bog; the area between Roy Road, Lewisburg Road and Route 565; Gunn Road near and north of its intersection with South Dory Road; and the hemlock forest along George Hill Road between the Pines and Plains roads.
- Use the results of the “Amphibian Research and Monitoring Initiative” to assess threats to the refuge’s vernal pools and their associated amphibian populations. By estimating the trends, extinction and turnover rates of populations in vernal pools, the refuge will have baseline monitoring information. If amphibian populations drop significantly, the refuge will take steps to identify factors related to that drop in population, and will manage for eliminating those factors when possible. Work with the USGS to establish adaptive management techniques and develop long-term management plans with suitable goals and objectives for managing vernal pools.
- Use accepted forestry practices to maximize horizontal diversity within these large forested blocks. That would reduce even-aged stands and produce a wider variety of habitats through better-developed layers of understory, mid-story and canopy.

Objective 1.5 (Bog Turtle Management)

In support of recovery efforts, pursue long-term monitoring and maintenance of bog turtle sites within the approved refuge acquisition boundary by developing site management and monitoring plans for occupied, historical, or potential sites. Recovery tasks 3.1, 3.5, and 6.1 through 6.4 should be incorporated into each site plan as appropriate.

Rationale

One bog turtle site is known on refuge-owned land, and another within the original refuge acquisition boundary. Federal-listed threatened bog turtles also inhabit the Papakating Creek Focus Area in sedge fens. Those fens are often small (<5 acres) habitat patches that generally occur as part of larger calcareous wetland complexes, including shrub and forested swamp, dwarf shrub bogs, marsh, and beaver ponds. Up to five Bog Turtle Population Analysis Sites (PAS) within the expansion area must be protected to meet the recovery objectives for the bog turtle (USFWS 2001). The New Jersey WAP and the New York CWCS identify the bog turtle as a “species of greatest conservation need.” The New York strategy identifies the lower Hudson River Valley, wherein the northern portion of the approved refuge boundary lies, as a hot spot for amphibian and reptile biodiversity in New York State. That area contains high quality habitat for wetland-dependent species, and some of the best bog turtle habitat in the Hudson River Valley. Important habitats include red maple-hardwood swamp, floodplain forest, fens, and shallow emergent marsh.

Surveys are needed to monitor the status of bog turtles at known sites, re-evaluate the presence of turtles at historical locations, and locate additional sites for conservation and recovery. Working with the Wallkill Watershed Management Group, and using maps available from federal and state sources, including the New Jersey WAP, we looked at areas within the expansion area for their long-term value as bog turtle habitat. We also used maps developed by the Service and the state’s endangered non-game species program to locate potential and actual bog turtle sites.

Strategies

- Work with the Service's New Jersey and New York Field Offices and the states of New Jersey and New York to screen the projects or permits that may affect bog turtles and their habitats on and near the refuge.
- Work with the Service's New Jersey and New York Field Offices and the states of New Jersey and New York to improve the effectiveness of regulatory reviews in protecting bog turtles and their habitats, specifically to address agencies working at cross-purposes when permitting activities in wetlands.
- Conduct surveys of known, historical and potential bog turtle habitat.
- Monitor the status of and threats to populations and habitat, including changes in hydrology, encroachment of development, successional changes, and the introduction and spread of invasive native and exotic plants. Monitor population trends, signs of recruitment and reproduction, seasonal movements, and home range using methods such as radio telemetry, trapping and foot searches.
- Each year, refuge staff will coordinate with the Bog Turtle Recovery Team, states (NYSDEC and NJDEP), and conservation partners to ensure the best available science is employed for management decisions.
- Continue efforts to acquire the one known bog turtle site on private land within the original refuge acquisition boundary.
- Deter poaching of bog turtles by conducting routine and random site visits.
- Evaluate report on freshwater turtle management, written by Dr. Kurt Buhlmann in 2005, to assess new bog turtle habitat management techniques.

Within 5 years of CCP approval:

- Develop a site management and monitoring plan for occupied sites on Service-owned land. The plan will stipulate actions needed to sustain and/or improve habitat for bog turtles such as annually collecting information on population characteristics and movement patterns.
- Complete a field survey, using Service protocol, of all suitable refuge habitat sites for the presence of bog turtles.
- Work with the Service's New Jersey Field Office to conduct an intra-Service section 7 consultation on all actions related to bog turtles in this CCP (See Appendix H) and in future management plans.

Within 15 years of CCP approval:

- Based on surveys, develop site management and monitoring plans for potential refuge sites that could support the reintroduction of bog turtles with active management (e.g., manipulating trees or simulating beaver ponds flooding regime sequence). Selectively cut or girdle red maple trees to maintain a 70-percent open canopy.
- Evaluate the pond by refuge headquarters to determine if natural hydrology can be restored to benefit bog turtles; implement if feasible.

Objective 1.6 (Other Threatened and Endangered Species)

- Work with partners to implement a tagging program for local bog turtles that would help identify them if they are captured illegally. Encourage the use of PIT tags so that illegal collectors will not know the turtle has been tagged, but law enforcement officials will be able to read the tag and determine where the turtle was collected.

In cooperation with the Service's New Jersey Field Office, establish survey and monitoring protocol for dwarf wedgemussels, Indiana bats, Mitchell's satyr butterfly and small-whorled pogonia within the approved refuge acquisition boundary.

Rationale

The dwarf wedgemussel, Indiana bat, and Mitchell's satyr butterfly are three of the five species the New Jersey WAP identifies as "wildlife of greatest conservation need" within the Skylands Landscape, where the refuge is located. The other two species are the bog turtle, mentioned in the objective above, and the bald eagle.

The Papakating Creek Focus Area contains potential habitat for the federal-listed endangered dwarf wedgemussel. The New Jersey WAP identifies the dwarf wedgemussel as a "species of greatest conservation need" within the Kittatinny Valley. State biologists have surveyed the refuge for dwarf wedgemussels, and although they did not find that species, the habitat conditions are ripe for its introduction.

The refuge first conducted mist net surveys for Indiana bats in August 2008. Surveyors found three Indiana bats, including one post-lactating female and one juvenile, which indicates the presence of a maternity colony nearby. The refuge had previously suspected the presence of Indiana bats, in part because they have been documented in several nearby locations. A maternity colony was found in the summer of 2007 in Wantage, about 2.25 to 4 miles from refuge lands; and since the mid-1990's, Indiana bats have been known to hibernate in three areas near Hibernia, N.J., about 20 miles south of the Wallkill River refuge. Also, the bats' summer focus area—where bats could potentially occur between April 1 and September 30—includes the entire refuge. Furthermore, the refuge provides riparian, forested and upland habitat types typically used by Indiana bats in summer for roosting and foraging.

Two well-known sites in Sussex and Warren counties recently supported the Mitchell's satyr butterfly (USFWS 1998). The approved acquisition boundary is located within Sussex County. Warren County is located immediately to the south. The confirmed sites are both fens located in areas of limestone bedrock, which is similar to the habitat type used by bog turtles. The recovery plan goal for New Jersey is to establish one metapopulation in the state.

The small-whorled pogonia is a plant that occurs in upland sites in mixed-deciduous or mixed-deciduous coniferous forests in second- or third-growth successional stages. Two confirmed extant sites of the plant are in Sussex County, New Jersey. The long-term goal for the species is to delist it by ensuring its long-term viability.

Strategies

- Continue land acquisition within the original refuge acquisition boundary to maintain undeveloped river shoreline and reduce continued degradation of water quality.

- Continue to work with state biologists and with the Service's New Jersey Field Office to conduct surveys of the Wallkill River and its tributaries for dwarf wedgemussel. State biologists have suggested using aquascopes during underwater searches, searching a 300-meter segment of the river bottom at a time, conducting shoreline inspections for shells and relics, and recording bivalve species, habitat information, current speed and depth of water at each location.
- If we find a population of dwarf wedgemussels on the refuge, we will establish and implement a monitoring and management plan for this listed species.

Within 5 years of CCP approval:

- Work with our New Jersey Field Office to hire a private contractor to conduct mist net surveys for Indiana bats on the refuge.
- Collaborate with Great Swamp refuge to recruit students to conduct research on Indiana bats on the refuge. The students could study the various life cycles of the bats, such as when and where they forage, hibernate and roost.
- Survey the expansion area for other potential habitat for federal-listed species.

Within 15 years of CCP approval:

- Determine the feasibility of re-establishing populations of dwarf wedgemussel within that species' historic range and, if feasible, introduce it into those areas.
- Collaborate with local colleges and universities to aid the refuge with research on dwarf wedgemussels.
- Begin surveys for Mitchell's satyr butterfly on the refuge in appropriate habitat types, such as calcareous fens. If found, implement the tasks in the recovery plan.
- Begin surveys for small-whorled pogonia on the refuge in appropriate habitat types, such as upland forest. If found, implement the tasks in the recovery plan.
- Encourage the protection of endangered and threatened species by developing an educational awareness program.

GOAL 2:

Objective 2.1 (Wetland Restoration)

Promote actions that contribute to a healthier Wallkill River.

Restore approximately 843 acres within the 17,050-acre approved refuge acquisition boundary to wetland habitat to facilitate the natural hydrologic flow of the Wallkill River and provide high quality habitat for migratory waterfowl and shorebirds.

Rationale

The bottomland wetlands associated with the Wallkill River offer some of the last undeveloped, large areas of habitat in northwestern New Jersey, and are important contributors to the water quality of the river. Emergent marshes act as natural filtration systems for the watershed, and support diverse marsh-nesting birds. Many of the wetlands surrounding the Wallkill River have been drained, ditched and converted to agricultural fields over the past 200 years. Identifying and mapping impediments to hydrologic flow will provide us with the information we need to decide where and how to restore wetland habitat. Then, we will use that information to restore or recreate a more natural



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Cows provide a microtopography beneficial to bog turtles.

hydrology. We would either restore wetlands by implementing non-intensive wetland restoration techniques or by creating moist soil management units (see objective 1.2). Wetland restoration would take place primarily on land adjacent to the Wallkill River, Papakating Creek, or other local stream. We would use site-specific criteria for determining the management actions to employ on any parcel.

Many species of marsh-dependent birds would benefit from wetland restoration at the refuge, including state-listed birds such as the American bittern, least bittern, king rail and black rail. Wetland restoration would also benefit the more than 150 species of land birds, including neotropical migrants that a recent State Breeding Bird Atlas recorded for the upper Wallkill River Valley as probable or confirmed breeders.

Strategies

- Identify and map in GIS impediments to historic hydrologic flow, including flooding regimes, on all Service-owned land. Include all drainage ditches, impoundments, farmed lands, dikes, excavations, tertiary roads, and berms affecting flow.
- Restore 25 acres of adjacent wet meadow habitat at Bassett's Bridge and allow natural hydrology to maintain the site.

Within 5 years of CCP approval:

- Evaluate non-forested wetlands on a parcel-by-parcel basis to determine which restoration technique to use. Criteria for evaluation would include:
 - Areas adjacent to a water source, such as the Wallkill River or Papakating Creek
 - Intensity of management
 - Seasonality of natural flooding
 - Sites containing soils suitable for holding water for moderate to extended periods
- Work with Ducks Unlimited to restore seasonal wetlands near the Wallkill River and its tributaries.

Within 15 years of CCP approval:

- Plant native hardwood species to help establish a forested floodplain corridor at least 100 meters wide from the riverbank on either side of the Wallkill River wherever other habitat types (e.g., grassland, scrub-shrub) do not take precedence because of specific management goals. Use forest regrowth to assist in the management and reduction of invasive plants.
- Reestablish a native grassland or scrub-shrub vegetative cover in areas where the hydrologic disturbance regime would inhibit forest establishment.

Objective 2.2 (Improve Water Quality through Partnerships)

Each year, work in partnership with local communities to improve the biological integrity and environmental health of the Wallkill River and its tributaries through restoration projects and activities that promote river stewardship and protection.

Rationale

Healthy water quality is essential if the Wallkill River is going to continue to provide habitat to riverine species like the dwarf wedgemussel and bog turtle. Non-point-source pollutants pose the largest threat to water quality. Most non-point-source pollutants (e.g., phosphorous, fecal coliform, nitrogen, sediments, metals, oils and greases) come in the form of runoff from land surfaces. In a 2004 report on the Papakating Creek Watershed (Sajdak, et al. 2004), the Wallkill River Watershed Management Group identified phosphorus and fecal coliform as the two pollutants of prime interest for assessment and testing in Papakating Creek. Point-source pollution can also be of concern, depending on the source and the amount of pollution discharged directly into the waterway.

Individual households can contribute to healthy water quality by using environmentally friendly cleaners and updating septic systems. Businesses can educate employees on best management practices. The future health of the Wallkill River and its tributaries depends on the collective effort of everyone who lives and works in the watershed.

Working with the Wallkill River Watershed Management Group and Trout Unlimited, we used federal and state maps to identify land within the expansion area that could be used for long-term studies on monitoring water quality. We also worked with those groups to identify recreational opportunities along the Papakating Creek and the Wallkill River, and explored ways to promote those opportunities.

Strategies

- Continue to work with the Wallkill River Watershed Coordinator to measure water quality through various studies and tests.
- Continue to work with the states of New Jersey and New York to promote healthy water quality.
- Continue to work with local governments, agencies, agricultural organizations and other partners to reduce non-point source pollution and sedimentation.
- Maintain Ducks Unlimited partnership and continue to restore and enhance wetlands.
- Integrate a water quality message in public use programs.

Within 5 years of CCP approval:

- Work with New Jersey Field Office and the Wallkill River Watershed Coordinator to establish a water quality monitoring protocol. Potential areas to be used for establishing that protocol include road junctions between the Papakating Creek and Gunn Rd./Wykertown Rd., Plains Rd., Armstrong Rd., Pelletown Rd., Roy Rd., McCoys Corner, Route 565 and State Route 23.
- Using GIS, map the Wallkill River, Papakating Creek and other main tributaries within the approved refuge acquisition boundary to identify each area's need for restoration and monitoring. Identify areas for chemical inputs, sedimentation, and erosion.
- Establish a cooperative agreement with the Wallkill River Watershed Management Group to implement jointly a DEP Action Now grant, which includes building canoe ramps, conducting riverbank restoration, and controlling invasive species. Also, implement a joint auto tour project.

- Work with Trout Unlimited to promote recreational use and wetland restoration on the refuge.
- Work with the Trust for Public Land and N.J. Green Acres to protect habitat along the river.
- Work with our Ecological Service Program and the Wallkill River Management Group to implement a water-quality monitoring program on wetlands in the current and expanded acquisition boundaries, in voluntary partnership with private landowners.

Within 15 years of CCP approval:

- Begin restoration on the most sensitive and most accessible areas of the waterways in and near the refuge.
- Develop partnership models that will result in multi-agency efforts to protect and restore the floodplains in and around the refuge.

Objective 2.3 (Private Lands Biologist)

A private lands biologist stationed at the refuge will work through the Partners for Fish and Wildlife Program and other federal programs to find at least two private landowners annually who will manage portions of their properties within the approved refuge acquisition boundary in conformance with the purposes and goals of the refuge.

Rationale

The refuge is not a closed system. Ecological communities continue across refuge boundaries and onto private and other public land. Federal programs, such as the Partners for Fish and Wildlife Program, enable refuges to work with private landowners to manage adjacent land in concert with refuge land to create the effect of large, contiguous blocks of significant ecological communities. Through that program, the Service works in cooperation with other government agencies, public and private organizations and private landowners to restore, create, or enhance fish and wildlife habitat for federal trust resources. Among other things, the program concentrates on restoring drained or otherwise degraded freshwater wetlands, restoring riparian habitats, restoring habitats of endangered and threatened species, and restoring fish habitats.

Although the area within and around the refuge has seen a moderate amount of residential development, hundreds of acres of privately owned abandoned agricultural land remain. We could convert these acres into significant wildlife habitat. Large blocks of wildlife habitat tend to support a larger diversity of wildlife species by reducing edge effects and maintaining a larger core, or interior, habitat.

Strategies

Within 10 years of CCP approval:

- Hire a private lands biologist to work with partners to create, restore or enhance regionally significant ecological communities (specifically, those identified in goal 1), focusing on landowners with large acreages or farmlands.
- A private lands biologist will cooperate with federal, state and local partners to provide technical information to private landowners interested in managing their lands as wildlife habitat. For example, a private landowner could learn about methods for eradicating invasive species.

- A private lands biologist will provide technical assistance to landowners and municipalities on how to raise awareness of human impacts on significant wetlands (e.g., groundwater withdrawal) and on the importance of vernal pools.
- A private lands biologist will work with landowners to conduct wetland inventories and riparian restoration along the Wallkill River and its tributaries within the acquisition boundary.

GOAL 3:

Increase or improve opportunities for hunting, fishing, environmental education, interpretation, wildlife observation and wildlife photography.

Objective 3.1 (Hunting)

The refuge will provide high-quality opportunities for hunting on Service-owned land within the approved acquisition boundary (New Jersey only), subject to specific refuge regulations.

Rationale

The Refuge Improvement Act identifies hunting as a priority public use. Priority public uses are to receive enhanced consideration when developing goals and objectives for refuges if they are determined to be compatible. Furthermore, the Service's Regional Office designated hunting as one of the refuge's "areas of emphasis." Providing opportunities for the public to engage in these activities on the refuge promotes visitor appreciation and support for refuge programs and helps raise public awareness for the need to protect wildlife habitat.

Opportunities for hunting continue to decrease as land throughout northern New Jersey is subdivided and developed. Consequently, the demand for hunting on public land has increased. Refuge hunt programs should promote positive hunting values and hunter ethics such as fair chase and sportsmanship. In general, hunting on refuges should be superior to that available on other public or private land and should provide participants with reasonable harvest opportunities, uncrowded conditions, fewer conflicts between hunters, relatively undisturbed wildlife and limited interference from or dependence on mechanized aspects of the sport. The refuge may issue hunt permits and create hunt zones to accomplish some of these objectives. We will open the refuge to bear hunting to assist the State of New Jersey in its bear population management and offer more wildlife-oriented recreational opportunities on the refuge. The refuge will only be open to bear hunting in New Jersey if the State has a bear hunt in any given year.

Strategies

- Pursuant to refuge regulations, continue the hunt program for deer in the New Jersey portion of the refuge, according to New Jersey state seasons.
- Pursuant to refuge regulations, continue the hunt program for spring and fall turkey, migratory bird, woodcock, and resident Canada geese in the New Jersey portion of the refuge during New Jersey state seasons.
- Continue youth hunting programs according to New Jersey state seasons.
- Continue to provide barrier-free hunting opportunities to disabled hunters upon request, pursuant to refuge and state regulations. A special hunt will include use of special parking areas.
- Continue to collect a refuge permit fee from all refuge hunters except youth, Golden Age and Golden Access hunters.
- Continue to prohibit night hunting and stocking of game species.
- Continue to keep the New York portion of the refuge closed to hunting.

Within 5 years of CCP approval:

- Complete the remaining components of an opening package that are required to open the New Jersey portion of the refuge to black bear hunting consistent with New Jersey state seasons and regulations. These remaining components include issuing a Finding of No Significant Impact for the final CCP, publishing a final regulation, revising 50 C.F.R. § 32.49.C, and issuing a new annual hunt plan. The refuge will only be open for bear hunting if the State is open for bear hunting.
- Open Service-owned land in the expansion area to public hunting, including black bear hunting, when appropriate conditions exist. Hunting will be prohibited where the refuge identifies it as a threat to public safety, when it poses an unacceptable disturbance to wildlife, or when the acquired area is too small. We will also continue to prohibit hunting in the 335-acre Liberty Marsh complex. Annual hunt plans and updated maps will identify closed areas. An Annual Hunt Plan will also reflect anticipated funding and staffing levels to administer the hunt. Potential hunting areas within the expansion area include the area along Madison Road, Papakating Preserve, and the land south of Wykertown and Meyers roads.
- Expand accessible hunting opportunities at Owens Station.

Objective 3.2 (Fishing)

The refuge will increase fishing opportunities and monitoring of fisheries on Service-owned land within the approved refuge acquisition boundary for able-bodied and disabled anglers.

Rationale

The Refuge Improvement Act identifies fishing as a priority public use. As explained in the rationale for objective 3.1, priority public uses are to receive

The Refuge holds an annual fishing event to introduce more youth to the sport.



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enhanced consideration when developing goals and objectives for refuges if they are determined to be compatible. The Service permits sport fishing on refuges where it contributes to or is compatible with refuge purposes. Sport fishing is an acceptable, traditional form of wildlife-oriented recreation. Where practical, fishing should be permitted according to state regulations and seasons. Fishing and watercraft launch sites are located on the refuge at Oil City Road, Bassett's Bridge and County Route 565. A pond adjacent to the refuge headquarters is open for public fishing.

Strategies

- Maintain fishing and/or canoe access at Oil City Road, Bassett's Bridge, and County Route 565, on the pond adjacent to refuge headquarters and on the Dagmar Dale Nature Trail.
- Complete the development of a parking area at Wallkill River on Route 565.
- Continue to allow anglers to fish anywhere from the river shoreline, which can be accessed from boats on the river or from designated footpaths.
- Continue to stock the pond near refuge quarters no. 5 (285 Lake Wallkill Road) with native fish only for National Fishing Day or other youth/family events.

Within 5 years of CCP approval:

- Post signs stating fishing regulations at canoe/boat launch areas.
- Expand fishing opportunities by providing fishing access to the Wallkill River from County Route 565 and adding an access site along Lake Wallkill Road, behind refuge quarters no. 5.
- Provide universal access for fishing at Bassett's Bridge.

Within 15 years of CCP approval:

- Institute a voluntary census of anglers.
- Provide fishing opportunities (some with universal access) in the expansion area on Service-owned land by building five boating/fishing access sites where major roads intersect with Papakating Creek. Potential sites include Route 23, where it crosses Papakating Creek; Route 565, where it crosses the creek in the northern part of the Papakating Creek Focus Area, and then again farther south; Roy Road, where it crosses the creek; McCoys Corner; Pelletown Rd., and Plains Rd. Plains Rd. has been used as a trout stocking area.

Objective 3.3 (Wildlife Observation and Photography)

Within 15 years of CCP approval, visitation will increase by 15 percent as the refuge increases opportunities for wildlife observation and photography on Service-owned land within the approved refuge acquisition boundary by opening new trails and increasing opportunities for access. The refuge will provide the infrastructure for a quality program by constructing parking areas, observation platforms and photo blinds.

Rationale

During scoping meetings, members of the public expressed concern that, during the hunt season, hunters were permitted to access many non-maintained and informal trails that the general public was prohibited from accessing. Therefore, during state hunting seasons, when hunters are permitted off-trail access from Monday through Saturday, we will allow the public off-trail access on Sundays, when hunting is prohibited. We also propose to extend some existing refuge trails, create a canoe trail along the Wallkill River, and create a new wildlife observation trail in the north section of the refuge. We will provide additional opportunities for wildlife observation and photography in the expansion boundary.

Strategies

- Continue to provide opportunities for wildlife observation and photography by allowing foot access to the refuge through the Wood Duck Nature Trail (1.5 miles), Dagmar Dale Nature Trail (loops of 1.2 and 1.7 miles) and Liberty Loop Nature Trail (2.5 miles). Snowshoeing and cross-country skiing are permitted in order to facilitate wildlife observation and photography in the winter, when access on foot is difficult.
- Continue to provide access to the Wallkill River at Oil City Road, Bassett's Bridge, and Route 565. Canoes, kayaks, and other small boats are allowed on the river.
- Maintain photography blind on Wood Duck Nature Trail.
- Maintain observation platform at Liberty Loop Nature Trail.

- Complete plans for parking area for canoe access on Route 565 and Bassett's Bridge. On the refuge, maintain the current wildlife observation and photography opportunities provided by the existing three-trail network.
- Each year, maintain Tract 43 as a 50-acre, early successional cool season grassland to promote an exceptional wildlife viewing opportunity.

Within 5 years of CCP approval:

- Allow off-trail access to Service-owned land on Sundays from September 1 through March 31. Parking at designated refuge parking areas will require the payment of a fee for the parking permit. The refuge will maintain the ability to restrict access in certain areas, such as around the Liberty Loop Nature Trail, to minimize disturbance to migrating and wintering birds.
- Using grant funds already secured, build a boardwalk and barrier-free canoe/kayak access site at Bassett's Bridge.
- Work with the current owners of the former Lehigh and New England railroad bed to obtain a right-of-way or in-fee acquisition of the railroad bed south of Judge Beach Road for use by the public as a nature trail for wildlife observation.
- Allow dog walking on the entire 2.5-mile Liberty Loop Nature Trail. The Appalachian Trail (AT) runs concurrent with a portion of the Liberty Loop Nature Trail. We believe that permitting dog walking on the AT portion of the Liberty Loop Nature Trail would allow through-hikers with dogs to continue on the AT rather than forcing them to walk on public roads with limited shoulder space. More importantly, because dogs are leashed and because the trail follows a dike system that isolates the activity from the surrounding wildlife habitats, the potential impacts are minimal. We will also allow dog walking on the portion of the Liberty Loop Nature Trail that does not run concurrent with the AT because we feel this will not result in any additional impacts beyond those of allowing it only on the AT portion of the trail, and because it will go a long way to avoid confusion on the trail. We discuss dog walking further in Chapter 4. The Appropriate Use Finding and Compatibility Determination for dog walking can be found in Appendix B.

Within 15 years of CCP approval:

- Construct a photography blind on the Liberty Loop Nature Trail.
- Extend the Wood Duck Nature Trail approximately 0.75 miles with a footbridge over the Wallkill River.
- Open the former Lehigh and New England railroad bed to foot access from Kelly Road up to Bassett's Bridge to create the 0.75-mile Timberdoodle Trail.
- After completion of restoration on Tract 15r (the former Mt. Bethel property), extend the Timberdoodle Trail north to connect with the Liberty Loop Nature Trail.
- To facilitate wildlife observation, provide boat/canoe access to Papakating Creek on Service-owned lands in the expansion area where major roads cross the creek, as mentioned in objective 3.2.
- Provide wildlife observation and photography opportunities in the expansion area, on Service-owned land, using pullouts and interpretive panels. Potential locations include Route 565; Plains Road; where the proposed expansion area reaches north to Stokes and High Point state parks; Armstrong Bog; Papakating Preserve; and along Gunn Road.

**Objective 3.4
(Interpretation)**

Within 15 years of CCP approval, create and enhance opportunities for interpretation on the refuge so that 90 percent of visitors engaged in those activities report they have a greater understanding of the Wallkill River refuge, the Refuge System, and the Service. More specifically, visitors will recognize the Service as the agency managing the refuge, and will be able to identify the importance of the Wallkill River and its valley to wildlife habitat. Also, increase the number of visitors by 15 percent within 15 years.

Rationale

The Refuge Improvement Act identifies interpretation as a priority public use. It is one of the most important ways we can raise the visibility of the refuge, convey its mission, and identify its significant contribution to wildlife conservation. Public understanding of the Service and its activities in the State of New Jersey is currently very low. Refuge visitors often confuse our agency with the New Jersey Division of Fish and Wildlife. Many are unaware of the Refuge System and its scope, and most do not understand the importance of the refuge in conserving migratory birds or its role in protecting wetland habitats along the Wallkill River.

Our proposed future programs will achieve our objectives through increased visitor contacts, on-site programs, and new and improved infrastructure. We want people to recognize that the refuge has a priority to manage a variety of habitats to benefit migratory birds and endangered species, with particular emphasis on restoring colonies of nesting birds and the federal-listed threatened bog turtle. Through an expanded interpretive program, visitors will gain a better understanding of the unique, important contribution of this refuge to wildlife and their habitats.

Strategies

- Continue to provide training opportunities for college students through a refuge internship program.
- Continue to conduct public events such as National Fishing Day.
- Continue to maintain five kiosks with up-to-date information about the refuge and refuge system.
- Continue to provide and update a Wood Duck Nature Trail brochure, general refuge brochure, bird checklist and other Service brochures.

Within 5 years of CCP approval:

- Increase involvement with local Boy Scout and Girl Scout programs. Provide opportunities on the refuge for awards for skill in performing activities on the refuge.
- Develop new interpretive materials, including animal and plant checklists and trail guides.
- Plan, fund, and install interpretive signs on all refuge nature trails and on the proposed Bassett's Bridge accessible boardwalk.
- Work with Refuge Friends and other refuge partners to increase interpretive programs.
- Continue to develop the refuge website to provide interpretive self-guiding programs and links to sites that offer maps and virtual tours of the refuge and surrounding area.

Within 15 years of CCP approval:

- Hire a visitor services professional, as noted in our proposed organization chart, to implement Visitor Services programs.
- Sponsor a series of speakers at the refuge for the public to learn about wildlife and nature.
- Create self-guided pamphlets for the major public access areas to the refuge, including those to be open on Sundays.
- Develop a series of roadside/parking lot displays to interpret the refuge, its resources and the system.
- Prepare handouts that illustrate natural resources and wildlife on the refuge and assist visitors in observing and photographing wildlife.
- Provide river access with signs for increased interpretive activities along the Wallkill River at Scenic Lakes Drive. Develop a permanent parking area and restroom facilities.
- Develop a Wallkill River canoe trail, install signs, and prepare trail brochure.
- Conduct guided walks on refuge trails and the former Lehigh and New England railroad bed south of Kelly Road. Access to the former railroad bed on this section will be only through guided walks or by special use permit to conservation and bird groups.
- Work with state partners to convert the old railroad bed that runs through the Papakating Creek Focus Area to a non-motorized, multi-use trail with interpretive opportunities at its many access points.
- Create visitor-based wildlife studies to increase interest and understanding of refuge management techniques.
- Collaborate with a local source that could provide the refuge with real-time weather data and create refuge programs linking weather and climate with migratory birds and other wildlife.

**Objective 3.5
(Environmental Education)**

Within 15 years of CCP approval, refuge staff will increase environmental education opportunities by offering at least four programs, on- or off-refuge, annually. We will stress our role as a facilitator of environmental education programs, rather than a primary provider.

Rationale

Because of its location in a populated area, the refuge has the opportunity to reach out to thousands of children and young adults. The student enrollment in Sussex and Orange Counties is approximately 64,000. Furthermore, the refuge is located within an hour's drive of the greater New York metropolitan area. The closest environmental education facility to the refuge is more than an hour away. By offering additional environmental education opportunities at the refuge, the community will become more knowledgeable about their own unique natural resources and environmental issues.

The current environmental education program focuses on the facilities available at the headquarters complex. Those include office space in the headquarters building, a large, paved parking area, public restroom facilities, two nature trails, river access and a bridge over the river, an outdoor classroom/pavilion and a pond. Through partnerships, the refuge is offering a limited environmental

education program. We will use this planning document to increase that program's scope.

In 2004, regional office staff helped the refuge develop an education facility concept for the Owens Station complex, a group of buildings uniquely located near the Wallkill River. We had planned to develop an education pavilion and a trail at Owens Station that would provide students an opportunity to visit a variety of native habitats, including woodland, shrub/scrub, field and wetland habitats. The concept also included an outdoor classroom area located near the river's edge.

Unfortunately, financial circumstances have prevented that concept from becoming a reality. If complete funding becomes available during the life of the plan, the refuge will pursue that concept for the Owens Station complex. Until then, the refuge will focus mainly on improving its existing environmental education programs.

Strategies

- Staff and volunteers will continue to conduct occasional on- and off-site presentations.
- Work with partners to develop a more comprehensive environmental education program.

Within 5 years of CCP approval:

- Work with partners such as New Jersey Audubon Society to help develop an integrated classroom curriculum in local schools.
- Through an expanded refuge internship program, work with local middle and high school students to increase awareness and career appreciation for wildlife and conservation biology.
- Expand the refuge's partnership with New Jersey Audubon Society (NJAS). Through that cooperation, have their staff and resources sponsor environmental education classes and public events on the refuge that incorporate the refuge or Service mission. Have NJAS sponsor or lead two or more public programs on the refuge each year.
- Provide at least one "Teach the Teacher" workshop each year.

Within 15 years of CCP approval:

- Work with state partners to offer joint environmental education programs focusing on the relationship of state land to federal land.
- If we secure complete funding for Owens Station, look for opportunities to offer environmental education programs, mainly through partners.

Objective 3.6 (Cultural Resources)

In compliance with the overall management objectives of the Service, refuge staff will encourage and enhance educational, interpretive and research opportunities for cultural resources identified by archaeologists.

Rationale

In addition to protecting cultural resources on Service-owned land, Service policy also encourages us to use information about cultural resources in educational materials for the public. As we state in chapter 2, the Service funded an historical and archeological reconnaissance of the Wallkill River Valley in 1999 (Maymon 2002). That reconnaissance compiles materials on the region's history,

and offers valuable information we could include in educational materials and programming for the public.

Although the reconnaissance thoroughly investigated historical sites on and around the refuge, it did not evaluate refuge structures for their historic potential, which this CCP proposes to do. Information about historic structures on the refuge also could be used in education materials for the public.

Strategies

- Continue to comply with section 106 of the National Historic Preservation Act of 1966, as amended.
- Continue to promote and encourage academic research on, or relating to, refuge land.
- Add Archaeological Resource Protection Act (ARPA) language to appropriate public use materials to warn visitors about disturbing/looting historic and archeological resources.
- Encourage law enforcement personnel to train in ARPA enforcement.

Within 10 years of CCP approval:

- Include cultural resources information in refuge environmental education and interpretation programs. Use results from local excavations, published articles on Wallkill Valley prehistory and the reconnaissance survey to interpret Native American history and prehistory.
- Monitor known prehistoric sites on the refuge to protect them from looting and other ARPA violations.
- Complete evaluations of historic refuge structures for National Register eligibility in compliance with section 110 of the National Historic Preservation Act of 1966.
- Survey potential prehistoric sites (quarries, living/working areas) and share archaeological information through interpretive programs.

Objective 3.7 (Quality Visitor Experience)

Within 5 years of CCP approval, hire a visitor services professional who will begin to establish protocols for calculating annual visitation and determining maximum visitor carrying capacities associated with maintaining a quality experience for all six priority public uses.



The refuge works with Service professionals at Wallkill, Great Swamp and the Regional Office to improve the visitor experience.

Rationale

The Service is constantly trying to strike a balance between protecting wildlife resources and offering a quality visitor experience. Refuge managers have a responsibility to be good stewards of publicly protected lands and waters. At the same time, the American public is entitled to quality outdoor recreation experiences on refuges when they do not interfere with the mission of the Service or refuge purposes. Some protected public lands are under-used by the American public, while others are over-used, causing concern about public safety, impacts on resources, or loss of quality recreational opportunities. A visitor capacity study is a management tool useful in sustaining quality outdoor recreation opportunities and matching public interests (demand) with available recreation opportunities (supply).

Strategies

Within 5 years of CCP approval:

- Obtain better estimates of visitation.
- Identify target audiences.
- Address the possibility of a fee program and/or installing a donation box at the Wood Duck Nature Trail to help fund maintenance work.

Within 15 years of CCP approval:

- Monitor the quality of wildlife-viewing opportunities by soliciting oral and written comments from visitors. Work with our regional office staff to develop and implement additional strategies for measuring quality of experience.
- Work with our regional office staff to develop and implement strategies for determining visitor carrying capacity.

GOAL 4:

Cultivate an informed and conservation-educated public that works to support the refuge purposes and the National Wildlife Refuge System mission.

Objective 4.1 (Outreach)

Increase participation in local events and remain active with conservation commissions and state and local conservation partnerships whose message advocates resource conservation and stewardship and promoting the mission of the National Wildlife Refuge System.

Rationale

Public outreach would improve recognition of the refuge, the Refuge System and the Service among neighbors, local leaders, conservation organizations and elected officials, thus generating support for conservation in the region.

Strategies

- Maintain open communication with local and county officials and organizations. Implement public use program in accordance with draft Visitor Services Plan prepared in 1997.
- Increase public awareness and attract visitors through use of media and local businesses, including local television, Internet, and local chambers of commerce.
- Participate in annual special events such as Vernon Earthfest, Orange County Conservation Field Days, Earth days and special events sponsored by local organizations.
- Continue to collaborate with Bergen County Audubon Society through the “Audubon Refuge Keeper” program.
- When invited, participate in local and regional committees, such as the Wallkill River Watershed Management Plan Public Advisory Committee and the Vernon Chamber of Commerce Eco-tourism Committee.

Within 5 years of CCP approval:

- Increase the visibility of refuge land through boundary posting and increased participation in community events.

- Undertake efforts to strengthen the refuge friends group and, where appropriate, make them a major partner in refuge efforts.
- Strengthen relationships with local businesses, particularly those that can benefit from ecotourism.

Within 15 years of CCP approval:

- Increase speaking opportunities about the refuge and its mission at local civic organizations throughout the Wallkill River watershed.
- Encourage local organizations to “adopt” the refuge by serving as advocates and undertaking special projects.

Objective 4.2 (Communication)

Increase public awareness and attract visitors through the media and local businesses, including local television, web page, and local chambers of commerce.

Rationale

It is Service policy that refuge personnel will actively involve themselves in effective communication between the Service and the public. Good public relations depend on many factors. Important among these is open and continuing communication between the refuge and the public. Various means are available to refuge managers by which to communicate information effectively, such as contact with the public through refuge programs, news media interviews, news releases, and participating in community events.

Strategies

- Continue to maintain the refuge website.
- Continue to distribute media releases, media alerts and television advertisements.
- Continue to hold media events at the refuge.
- Continue to offer and provide tours to members of the local media.
- Continue to participate in local chamber of commerce events.

Within 5 years of CCP approval:

- Increase the visibility of the refuge within the community through increased participation in community events, such as fairs, festivals and celebrations.
- Strengthen relationships with local businesses, particularly those that can benefit from ecotourism.
- Encourage refuge staff to be involved with one or more community-based groups, based on their interests.
- Encourage local organizations to link appropriate goals with those of the Service and the refuge. Participate in joint publications, media releases and events.

Objective 4.3 (Support Programs)

Maintain programs for volunteers, interns, youths and community service participants to help support all aspects of refuge management including maintenance, biological surveys and public use.

Rationale

Volunteers, interns and other youth and community service participants contribute significantly to the refuge's biological, public use, and maintenance programs. Their work includes wildlife surveys, invasive species identification, bluebird box monitoring and maintenance, trail maintenance, carpentry, computer support, visitor services support, and cleanup or grounds maintenance. In fiscal year 2006, 35 refuge volunteers contributed more than 2,000 hours.

Strategies

- Continue to work with independent, local volunteers as opportunities arise. Make an effort to recruit volunteers who have a specific set of skills and knowledge of the refuge so they can work with minimal supervision.
- Continue to foster the new refuge Friends Group (founded in 2006).
- Continue scouting programs.
- Continue to provide training opportunities for college students through refuge (and partner) internship program.
- Work with Sussex County Probation Office's community service program to maintain trails, grounds, and structures.

Within 5 years of CCP approval:

- Develop an orientation guide and provide liaison between staff, volunteers, and community service participants to work on specific projects.

Chapter 5



Service staff search for bog turtles on the refuge using radio telemetry.

List of Preparers

- **Members of the Core Planning Team**
- **Assistance from Other Service Personnel**

Members of the Core Planning Team

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Glossary

Mao Lin/USFWS



Turtlehead (chelone sp.) is one of the native plant species that can be found on the Wallkill River refuge.

Glossary

accessibility	the state or quality of being easily approached or entered, particularly as it relates to complying with the Americans With Disabilities Act.
accessible facilities	structures accessible for most people with disabilities without assistance; facilities that meet UFAS standards; ADA-accessible [e.g., parking lots, trails, pathways, ramps, picnic and camping areas, restrooms, boating facilities (docks, piers, gangways), fishing facilities, playgrounds, amphitheaters, exhibits, audiovisual programs, and wayside sites].
aggregate	many parts considered together as a whole.
agricultural land	non-forested land (now or recently orchards, pastures, or crops).
alternative	a reasonable way to fix an identified problem or satisfy a stated need [40 CFR 1500.2] (see “management alternative”).
appropriate use	<p>a proposed or existing use on a refuge that meets at least one of the following three conditions:</p> <ol style="list-style-type: none"> 1. the use is a wildlife-dependent one; 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 3. the use has been determined appropriate as specified in section 1.11 of that act.
approved acquisition boundary	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 which 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 System until the Service buys them or they are placed under an agreement that provides for their management as part of the System.
aquatic	growing in, living in, or dependent upon water.
area of biological significance	see “special focus area.”
best management practices	land management practices that produce desired results. [n.b. Usually describing forestry or agricultural practices effective in reducing non point source pollution, like reseeding skidder trails or not storing manure in a flood plain. In their broader sense, practices that benefit target species.]
biological diversity or biodiversity	the variety of life and its processes and includes the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur.
biological integrity	biotic composition, structure, and functioning at genetic, organism, and community levels comparable with historic conditions, including the natural biological processes that shape genomes, organisms and communities.
breeding habitat	habitat used by migratory birds or other animals during the breeding season.

categorical exclusion (CE, CX, CATEX, CATX)	pursuant to the National Environmental Policy Act (NEPA), a category of Federal agency actions that do not individually or cumulatively have a significant effect on the human environment [40 CFR 1508.4].
CFR	the Code of Federal Regulations.
community	the locality in which a group of people resides and shares the same government.
community type	a particular assemblage of plants and animals, named for its dominant characteristic.
compatible use	“The term ‘compatible use’ means a wildlife-dependent recreational use or any other use of a refuge that, in the sound professional judgment of the Director, will not materially interfere with or detract from the fulfillment of the mission of the System or the purposes of the refuge.”— National Wildlife Refuge System Improvement Act of 1997 [Public Law 105-57; 111 Stat. 1253].
compatibility determination	a required determination for wildlife-dependent recreational uses or any other public uses of a refuge.
comprehensive conservation plan (CCP)	mandated by the Improvement Act, a document that provides a description of the desired future conditions and long-range guidance for the project leader to accomplish purposes of the refuge system and the refuge. CCPs establish management direction to achieve refuge purposes [P.L. 105-57; FWS Manual 602 FW 1.4].
concern	see “issue.”
conservation	managing natural resources to prevent loss or waste. [n.b. Management actions may include preservation, restoration, and enhancement.]
conservation easement	a legal agreement between a landowner and a land trust (e.g., a private, nonprofit conservation organization) or government agency that permanently limits the uses of a property to protect its conservation values.
cool-season grass	introduced grass for crop and pastureland that grows in spring and fall and is dormant during hot summer months.
cooperative agreement	a usually long-term habitat protection action, which can be modified by either party, in which no property rights are acquired. Lands under a cooperative agreement do not necessarily become part of the National Wildlife Refuge System.
critical habitat	according to U.S. Federal law, the ecosystems upon which endangered and threatened species depend.
cultural resource inventory	a professional study to locate and evaluate evidence of cultural resources within a defined geographic area. [n.b. Various levels of inventories may include background literature searches, comprehensive field examinations to identify all exposed physical manifestations of cultural resources, or sample inventories for projecting site distribution and density over a larger area. Evaluating identified cultural resources to determine their eligibility for the National Register follows the criteria in 36 CFR 60.4 (cf. FWS Manual 614 FW 1.7).]
cultural resource overview	a comprehensive document prepared for a field office that discusses, among other things, project prehistory and cultural history, the nature and extent of known cultural resources, previous research, management objectives, resource management conflicts or issues, and a general statement of how program objectives should be met and conflicts resolved. [An overview should reference or incorporate information from a field office’s background or literature search described in section VIII of the Cultural Resource Management Handbook (cf. FWS Manual 614 FW 1.7).]

database	a collection of data arranged for ease and speed of analysis and retrieval, usually computerized.
degradation	the loss of native species and processes due to human activities such that only certain components of the original biodiversity persist, often including significantly altered natural communities.
digitizing	the process of converting maps into geographically referenced electronic files for a geographic information system (GIS).
disturbance	any relatively discrete event in time that disrupts ecosystem, community, or population structure and changes resources, substrate availability, or the physical environment.
donation	a citizen or group may wish to give land or interests in land to the Service for the benefit of wildlife. Aside from the cost factor, these acquisitions are no different than any other means of land acquisition. Gifts and donations have the same planning requirements as purchases.
easement	an agreement by which landowners give up or sell one of the rights on their property (e.g., landowners may donate rights-of-way across their properties to allow community members access to a river). See “conservation easement.”
ecological processes	a complex mix of interactions among animals, plants, and their environment that ensures maintenance of an ecosystem’s full range of biodiversity. Examples include population and predator-prey dynamics, pollination and seed dispersal, nutrient cycling, migration, and dispersal.
ecoregion	a territory defined by a combination of biological, social, and geographic criteria, rather than geopolitical considerations; generally, a system of related, interconnected ecosystems.
ecosystem	a natural community of organisms interacting with its physical environment, regarded as a unit.
ecotourism	visits to an area that maintains and preserves natural resources as a basis for promoting its economic growth and development.
emergent wetland	wetlands dominated by erect, rooted, herbaceous plants.
endangered species	a Federal- or State-listed protected species in danger of extinction throughout all or a significant portion of its range.
environmental education	curriculum-based education aimed at producing a citizenry that is knowledgeable about the biophysical environment and its associated problems, aware of how to help solve those problems, and motivated to work toward solving them.
environmental health	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.
Environmental Assessment (EA)	a public document that discusses the purpose and need for an action, its alternatives, and provides sufficient evidence and analysis of its impacts to determine whether to prepare an environmental impact statement or a finding of no significant impact (q.v.) [cf. 40 CFR 1508.9].
exemplary community type	an outstanding example of a particular community type.
extirpated	status of a species or population that has completely vanished from a given area but that continues to exist in some other location.

exotic species	a species that is not native to an area and has been introduced intentionally or unintentionally by humans; not all exotics become successfully established.
Federal land	public land owned by the Federal Government, including national forests, national parks, and national wildlife refuges.
Federal-listed species	a species listed either as endangered, threatened, or a species at risk (formerly, a “candidate species”) under the Endangered Species Act of 1973, as amended.
fee-title acquisition	the acquisition of most or all of the rights to a tract of land; a total transfer of property rights with the formal conveyance of a title. While a fee-title acquisition involves most rights to a property, certain rights may be reserved or not purchased, including water rights, mineral rights, or use reservation (e.g., the ability to continue using the land for a specified time period, such as the remainder of the owner’s life).
Finding of No Significant Impact (FONSI)	supported by an environmental assessment, a document that briefly presents why a Federal action will have no significant effect on the human environment, and for which an environmental impact statement, therefore, will not be prepared [40 CFR 1508.13].
fire regime	the characteristic frequency, intensity, and spatial distribution of natural fires within a given ecoregion or habitat.
floodplain	flat or nearly flat land that may be submerged by floodwaters; a plain built up or in the process of being built up by stream deposition.
focus areas	see “special focus areas.”
forested land	land dominated by trees. For impacts analysis in CCP’s, we assume all forested land has the potential for occasional harvesting; we assume forested land owned by timber companies is harvested on a more intensive, regular schedule.
forested wetlands	wetlands dominated by trees.
fragmentation	the disruption of extensive habitats into isolated and small patches. Fragmentation has two negative components for biota: the loss of total habitat area; and, the creation of smaller, more isolated patches of habitat remaining.
geographic information system (GIS)	a computerized system to compile, store, analyze and display geographically referenced information (e.g., GIS can overlay multiple sets of information on the distribution of a variety of biological and physical features).
grassland	a habitat type with landscapes dominated by grasses and with bio-diversity characterized by species with wide distributions, communities being relatively resilient to short-term disturbances but not to prolonged, intensive burning or grazing. In such systems, larger vertebrates, birds, and invertebrates display extensive movement to track seasonal or patchy resources.
groundwater	water in the ground that is in the zone of saturation, from which wells and springs and groundwater runoff are supplied.
habitat fragmentation	the breaking up of a specific habitat into smaller, unconnected areas. [n.b. A habitat area that is too small may not provide enough space to maintain a breeding population of the species in question.]
habitat conservation	protecting an animal or plant habitat to ensure that the use of that habitat by the animal or plant is not altered or reduced.
habitat	the place where a particular type of plant or animal lives. [n.b. An organism’s habitat must provide all of the basic requirements for life, and should be free of harmful contaminants.]

historic conditions	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.
hydrologic or flow regime	characteristic fluctuations in river flows.
hydrology	the science of waters of the earth: their occurrences, distributions, and circulations; their physical and chemical properties; and their reactions with the environment, including living beings.
impoundment	a body of water, such as a pond, confined by a dam, dike, floodgate, or other barrier, which is used to collect and store water for future use.
indigenous	native to an area.
interpretive facilities	structures that provide information about an event, place, or thing by a variety of means, including printed, audiovisual, or multimedia materials (e.g., kiosks that offer printed materials and audiovisuals, signs, and trail heads).
interpretive materials	any tool used to provide or clarify information, explain events or things, or increase awareness and understanding of the events or things (e.g., printed materials like brochures, maps or curriculum materials; audio/visual materials like video and audio tapes, films, or slides; and, interactive multimedia materials, CD ROM or other computer technology).
invasive species	an alien species whose introduction causes or is likely to cause economic or environmental harm or harm to human health.
invertebrate	any animal lacking a backbone or bony segment that encloses the central nerve cord.
issue	any unsettled matter that requires a management decision (e.g., a Service initiative, an opportunity, a management problem, a threat to the resources of the unit, a conflict in uses, a public concern, or the presence of an undesirable resource condition). [n.b. A CCP should document, describe, and analyze issues even if they cannot be resolved during the planning process (FWS Manual 602 FW 1.4).]
Land Protection Plan (LPP)	a document that identifies and prioritizes lands for potential Service acquisition from a willing seller, and describes other methods of providing protection. Landowners within project boundaries will find this document, which is released with environmental assessments, most useful.
land trusts	organizations dedicated to conserving land by purchase, donation, or conservation easement from landowners.
landscape	an aggregate of landforms, together with its biological communities.
management alternative	a set of objectives and the strategies needed to accomplish each objective [FWS Manual 602 FW 1.4.].
management concern	see “issue” and “migratory nongame birds of management concern.”
management opportunity	see “issue.”
management plan	a plan that guides future land management practices on a tract. [N.b. In the context of an environmental impact statement, management plans may be designed to produce additional wildlife habitat along with primary products like timber or agricultural crops (see “cooperative agreement”).]

management strategy	a general approach to meeting unit objectives. [N.b. A strategy may be broad, or it may be detailed enough to guide implementation through specific actions, tasks, and projects (FWS Manual 602 FW 1.4).]
mesic soil	sandy-to-clay loams containing moisture-retentive organic matter, well-drained (no standing matter).
mission statement	a succinct statement of the purpose for which the unit was established; its reason for being.
mitigation	actions to compensate for the negative effects of a particular project (e.g., wetland mitigation usually restores or enhances a previously damaged wetland or creates a new wetland).
National Environmental Policy Act of 1969 (NEPA)	requires all Federal agencies to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in planning and implementing environmental actions. Federal agencies must integrate NEPA with other planning requirements, and prepare appropriate NEPA documents to facilitate better environmental decision-making (cf. 40 CFR 1500).
National Wildlife Refuge System (System)	all lands and waters and interests therein administered by the Service as wildlife refuges, wildlife ranges, wildlife management areas, waterfowl production areas, and other areas for the protection and conservation of fish and wildlife, including those that are threatened with extinction.
native	a species that, other than as a result of an introduction, historically occurred or currently occurs in a particular ecosystem.
native plant	a plant that has grown in the region since the last glaciation, and occurred before European settlement.
natural disturbance event	any natural event that significantly alters the structure, composition, or dynamics of a natural community (e.g., floods, fires, and storms).
non-consumptive, wildlife-oriented recreation	wildlife observation and photography and environmental education and interpretation (see “wildlife-oriented recreation”).
non-native species	see “exotic species.”
non point source pollution	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.
non-forested wetlands	wetlands dominated by shrubs or emergent vegetation.
Notice of Intent	(NOI) an announcement we publish in the Federal Register that we will prepare and review an environmental impact statement [40 CFR 1508.22].
objective	see “unit objective.”
old fields	areas formerly cultivated or grazed, where woody vegetation has begun to invade. [N.b. If left undisturbed, old fields will eventually succeed into forest. Many occur at sites marginally suitable for crops or pasture. They vary markedly in the Northeast, depending on soil and land use and management history.]
outdoor education	educational activities that take place in an outdoor setting.
partnership	a contract or agreement among two or more individuals, groups of individuals, organizations, or agencies, in which each agrees to furnish a part of the capital or some service in kind (e.g., labor) for a mutually beneficial enterprise.

payment in lieu of taxes	cf. Revenue Sharing Act of 1935, Chapter One, Legal Context.
point source	a source of pollution that involves discharge of waste from an identifiable point, such as a smokestack or sewage-treatment plant.
population monitoring	assessing the characteristics of populations to ascertain their status and establish trends on their abundance, condition, distribution, or other characteristics.
prescribed fire	the application of fire to wildland fuels, either by natural or intentional ignition, to achieve identified land use objectives [FWS Manual 621 FW 1.7].
priority public use	a compatible wildlife-dependent recreational use of a refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation.
private land	land owned by a private individual or group or non-government organization.
private landowner	see “private land.”
private organization	any non-government organization.
protection	mechanisms like fee title acquisition, conservation easements, or binding agreements with landowners that ensure land use and land management practices will remain compatible with maintaining species populations at a site (see “long-term protection”).
public	individuals, organizations, and non-government groups; officials of Federal, State, and local government agencies; Native American tribes, and foreign nations—includes anyone outside the core planning team, those who may or may not have indicated an interest in the issues, and those who do or do not realize that our decisions may affect them.
public involvement	offering an opportunity to interested individuals and organizations whom our actions or policies may affect to become informed; soliciting their opinions. We thoroughly study public input, and give it thoughtful consideration in shaping decisions about managing refuges.
public land	land owned by the local, State, or Federal Government.
rare species	species identified for special management emphasis because of their uncommon occurrence within a watershed.
rare community types	plant community types classified as rare by any State program; includes exemplary community types.
refuge goals	According to “Writing Refuge Management Goals and Objectives: A Handbook,” refuge goals are “...descriptive, open-ended, and often broad statements of desired future conditions that convey a purpose but do not define measurable units.”
refuge purposes	According to the National Wildlife Refuge System Improvement Act of 1997, “The terms ‘purposes of the refuge’ and ‘purposes of each refuge’ mean the purposes specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, refuge unit, or refuge subunit.”
refuge lands	lands in which the Service holds full interest in fee title or partial interest like an easement.
restoration	management of a disturbed or degraded habitat that results in the recovery of its original state (e.g., restoration may involve planting native grasses and forbs, removing shrubs, prescribed burning, or reestablishing habitat for native plants and animals on degraded grassland).

riparian	referring to the interface between freshwater habitats and the terrestrial landscape.
riparian habitat	habitat along the banks of a stream or river (see note above).
riverine	within the active channel of a river or stream.
riverine wetlands	generally, all the wetlands and deepwater habitats occurring within a freshwater river channel not dominated by trees, shrubs, or persistent emergents.
runoff	water from rain, melted snow, or agricultural or landscape irrigation that flows over a land surface into a water body (see “urban runoff”).
Service presence	Service programs and facilities that it directs or shares with other organizations; public awareness of the Service as a sole or cooperative provider of programs and facilities.
shrublands	habitats dominated by various species of shrubs, often with many grasses and forbs.
species of concern	species not Federal-listed as threatened or endangered, but about which we or our partners are concerned.
species diversity	usually synonymous with “species richness,” but may also include the proportional distribution of species.
species richness	a simple measure of species diversity calculated as the total number of species in a habitat or community.
State agencies	natural resource agencies of State governments
State land	State-owned public land.
State-listed species	see “Federal-listed species.”
step-down management plan	a plan for dealing with specific refuge management subjects, strategies, and schedules, e.g., cropland, wilderness, and fire [FWS Manual 602 FW 1.4.].
strategy	a specific action, tool, technique, or combination of actions, tools, and techniques for meeting unit objectives.
succession	the natural, sequential change of species composition of a community in a given area.
surface water	all waters whose surface is naturally exposed to the atmosphere, or wells or other collectors directly influenced by surface water.
sustainable development	the attempts to meet economic objectives in ways that do not degrade the underlying environmental support system. Note that there is considerable debate over the meaning of this term...we define it as “human activities conducted in a manner that respects the intrinsic value of the natural world, the role of the natural world in human well-being, and the need for humans to live on the income from nature’s capital rather than the capital itself.”
terrestrial	living on land.
threatened species	a Federal-listed, protected species that is likely to become an endangered species in all or a significant portion of its range.
tributary	a stream or river that flows into a larger stream, river, or lake, feeding it water.

trust resource	a resource that the Government holds in trust for the people through law or administrative act. [N.b. A federal trust resource is one for which responsibility is given wholly or in part to the Federal Government by law or administrative act. Generally, federal trust resources are nationally or internationally important no matter where they occur, like endangered species or migratory birds and fish that regularly move across state lines. They also include cultural resources protected by Federal historic preservation laws, and nationally important or threatened habitats, notably wetlands, navigable waters, and public lands like state parks and national wildlife refuges.]
unfragmented habitat	large, unbroken blocks of a particular type of habitat.
upland	dry ground (i.e., other than wetlands).
upland meadow or pasture	upland pastures are areas maintained in grass for livestock grazing; upland meadows are hay production areas. [N.b. Meadows may occur naturally in tidal marshes and inland flooded river valleys or, more frequently, at upland sites where vegetation has been cleared and grasses planted. Eventually, meadows will revert to old fields and forest if they are not mowed, grazed, or burned. Grasses in both managed meadows and pastures usually are similar, but pasture herbs often differ because of selective grazing.]
vernal pool	depressions holding water for a temporary period in the spring, and in which various amphibians lay eggs.
vision statement	a concise statement of what the unit could achieve in the next 10 to 15 years.
watershed	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.
wetlands	lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. These areas are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted to life in saturated soil conditions.
wilderness study areas	lands and waters identified by inventory as meeting the definition of wilderness and being evaluated for a recommendation they be included in the Wilderness.
wilderness	see “designated wilderness area.”
wildfire	a free-burning fire requiring a suppression response; all fire other than prescribed fire that occurs on wildlands [FWS Manual 621 FW 1.7].
wildlife-dependent recreational use	a use of a national wildlife refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation (National Wildlife Refuge System Administration Act of 1966).
wildlife management	manipulating wildlife populations, either directly by regulating the numbers, ages, and sex ratios harvested, or indirectly by providing favorable habitat conditions and alleviating limiting factors.
wildlife-oriented recreation	recreational activities in which wildlife is the focus of the experience. According to the National Wildlife Refuge Improvement Act of 1997, “The terms ‘wildlife-dependent recreation’ and ‘wildlife-dependent recreational use’ mean a use of a refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation.”

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An example of the diversity of habitats found at Wallkill River refuge.

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Appendix A



USFWS

A refuge staffer holds a bog turtle recently extracted from its muddy hiding place.

Species of Conservation Concern

■ Guide to Table A.1

■ Table A.1. Animal Species of Conservation Concern for Wallkill River National Wildlife Refuge

Guide to Table A.1

¹Global Rank

NatureServe Global Conservation Status Ranks.
(See <http://www.natureserve.org/explorer/granks.htm> for a complete legend)

Basic Ranks

G1=critically imperiled **G2**=imperiled **G3**=vulnerable
G4=apparently secure **G5**=secure

Variant Ranks

G#G#=range rank (indicates range of uncertainty in status)

Rank Qualifiers

Q=questionable taxonomy

Intraspecific Taxon
Conservation Status Ranks

T#=intraspecific taxon (indicates status of subspecies or varieties)

²Federal Status

Federal Endangered Species List
(see <http://www.fws.gov/Endangered/wildlife.html> for more information)

T=threatened **E**=endangered

³New York State and
New Jersey State Rank /
Status

State of New York Threatened and Endangered Species List
(see <http://www.dec.ny.gov/animals/29386.html> and http://www.state.nj.us/dep/parksandforests/natural/heritage/spplant_ap1.html for a complete legend)

S1=typically 5 or fewer occurrences **S2**=typically 6 to 20 occurrences
S3=typically 21 to 100 occurrences **S4**=apparently secure in the state
S5=demonstrably secure in the state **SU**=status unknown
SH=historically known in the state, but not seen in the past 15 to 20 years
T=threatened **E**=endangered **SC**=special concern
P=protected wildlife **Un**=unprotected **U**=undetermined
SA=accidental in state **RP**=regional priority **CC**=conservation concern
B=breeding population **N**=non-breeding population

GS=game species (New Jersey Rank)

⁴BCC 2002 / BCR 28

Birds of Conservation Concern 2002 / Bird Conservation Region 28 Meeting
(see <http://www.fws.gov/migratorybirds/reports/bcc2002.pdf> and http://www.acjv.org/bird_conservation_regions.htm#28 for more information)

X=sighted at the refuge **X-B**=Sighted at the refuge and breeding

⁵PIF 17

Partners in Flight Physiographic Area 17. Birds are categorized into the following tiers:

(see http://www.blm.gov/wildlife/pl_17sum.htm for more information)

IA=High Continental Concern and High Regional Responsibility
IB=High Continental Concern and Low Regional Responsibility
IIA=High Regional Priority and High Regional Concern
IIB=High Regional Priority and High Regional Responsibility
IIC=High Regional Priority and High Regional Threats
IV=Additional State Listed

Table A.1. Animal Species of Conservation Concern for Wallkill River National Wildlife Refuge

Table A.1. Animal Species of Conservation Concern for Wallkill River Refuge.

Species	Common Name	Global Rank ¹	Federal ²	New York Rank/ Status ³		New Jersey Rank /Status ³		BCC 2002 BCR 28 ⁴	PIF Area 17 ⁵
				State Rank	State Listing	State Rank	State Listing		
INVERTEBRATES									
<i>Alasmidonta heterodon</i>	Dwarf wedgemussel	G1 G2	E	S1	E	S1	E		
<i>Alasmidonta undulata</i>	Triangle floater	G4				S3	T		
<i>Atrytone arogos arogos</i>	Arogos skipper	G3 G4		SH	E	S1	E		
<i>Bolaria selene myrina</i>	Silver-bordered fritillary	G5 T5				S2	T		
<i>Calephelis borealis</i>	Northern metalmark	G3 G4			Un	S2 S3	SC		
<i>Chlosyne harrisii</i>	Harris's checkerspot	G4				S2 S3	SC		
<i>Enallagma laterale</i>	New England bluet	G3		S2	Un	S1 S2	CC		
<i>Gomphus septima</i>	Clubtail dragonfly	G2		S1	Un-SC	S1	CC		
<i>Hemileuca sp 2</i>	Schweitzer's buckmoth	G1Q				S1	CC		
<i>Lampsilis cariosa</i>	Yellow lampmussel	G3 G4		S3	Un	S1	T		
<i>Lampsilis radiata</i>	Eastern lampmussel	G5					T		
<i>Lasmigona subviridis</i>	Green floater	G3		T	T	S1	E		
<i>Leptodea ochracea</i>	Tidewater mucket	G4		S1	Un	S1	T		
<i>Neonympha mitchellii</i>	Mitchell's satyr	G1 G2 T1 T2	E			SH	E		
<i>Nicrophorus americanus</i>	American burying beetle	G2 G3	E	SH	E	SH	E		
<i>Ophiogomphus anomalus</i>	Extra-striped snaketail	G3		S1	Un-SC	SH	CC		
<i>Papaipema appassionata</i>	Pitcher plant borer moth	G4		SU	Un	S2 S3	CC		
<i>Pyrgus wyandot</i>	Appalachian grizzled skipper	G2		SH	E	SH	E		

AMPHIBIANS									
<i>Acris crepitans crepitans</i>	Northern cricket frog	G5 T5		S1	E	S3	U		
<i>Ambystoma jeffersonianum</i>	Jefferson salamander	G5			Un-SC	S3	SC		
<i>Ambystoma laterale</i>	Blue-spotted salamander	G5			Un-SC	S1	E		
<i>Ambystoma opacum</i>	Marbled salamander	G5			Un-SC	S3	SC		
<i>Bufo woodhousii fowleri</i>	Fowler's toad						SC		
<i>Eurycea longicauda</i>	Long-tail salamander	G5 T5		S2 S3	Un-SC	S2	T		
<i>Gyrinophilus p. porphyriticus</i>	Northern spring salamander	G5			Un	S3	SC		
<i>Rana sphenoccephala</i>	Southern leopard frog	G5		S1 S2	SC				

Table A.1. Animal Species of Conservation Concern for Wallkill River National Wildlife Refuge

Species	Common Name	Global Rank ¹	Federal ²	New York Rank/ Status ³		New Jersey Rank /Status ³		BCC 2002 BCR 28 ⁴	PIF Area 17 ⁵
				State Rank	State Listing	State Rank	State Listing		
REPTILES									
<i>Agkistrodon contortrix mokasen</i>	Northern copperhead	G4			Un	S4	SC		
<i>Carphophis amoenus amoenus</i>	Eastern worm snake				Un-SC				
<i>Clemmys guttata</i>	Spotted turtle				Un-SC		SC		
<i>Crotalus h. horridus</i>	Timber rattlesnake	G4		S3	T	S2	E		
<i>Glyptemys (Clemmys) insculpta</i>	Wood turtle	G4		S3	SC	S3	T		
<i>Glyptemys muhlenbergii</i>	Bog turtle	G3	T	S2	E	S2	E		
<i>Heterodon platyrhinos</i>	Eastern hog-nosed snake				Un-SC		CC		
<i>Terrapene carolina carolina</i>	Eastern box turtle	G5		S3	SC		SC		
<i>Thamnophis sauritus sauritus</i>	Eastern ribbonsnake				Un		CC		
MAMMALS									
<i>Lasionycteris noctivgans</i>	Silver-haired bat				Un		RP		
<i>Lasiurus borealis</i>	Eastern red bat				Un		RP		
<i>Lasiurus cinereus</i>	Hoary bat				Un		RP		
<i>Lynx rufus</i>	Bobcat					S3	E		
<i>Myotis leibii</i>	Eastern small-footed myotis	G3		S2	Un-SC	S1	CC		
<i>Myotis sodalis</i>	Indiana bat	G2	E	S1	E	S1	E		
<i>Neotoma floridana magister</i>	Alleghany woodrat	G3 G4		S1	E	S1	E		
<i>Sorex dispar</i>	Long-tailed (Rock) shrew	G4			Un	S1	RP		
<i>Synaptomys cooperi</i>	Southern Bog lemming	G5			Un	S2	RP		
FISH									
<i>Lampetra appendix</i>	American brook lamprey	G4				S2	RP		
<i>Notropis bifrenatus</i>	Bridle shiner						RP		
BIRDS									
<i>Accipiter cooperii</i>	Cooper's hawk	G5			SC	S3B S4N	T		IV
<i>Accipiter gentilis</i>	Northern goshawk	G5			SC	S1B S4N	E		IV
<i>Accipiter striatus</i>	Sharp-shinned hawk	G5			SC	S2B S3N	SC		IV
<i>Actitis macularia</i>	Spotted sandpiper	G5			P	S3B	SC		IV
<i>Aegolius acadicus</i>	Northern Saw-whet owl				P		RP	X-B	
<i>Aimophila aestivalis</i>	Bachman's sparrow				P		RP	X	
<i>Aix sponsa</i>	Wood duck	G5				S5	GS-RP		IIB
<i>Ammodramus henslowii</i>	Henslow's sparrow	G4		S3B SAN	T	S1B	E	X	IB
<i>Ammodramus savannarum</i>	Grasshopper sparrow	G5			SC	S2B	T		IIC

Table A.1. Animal Species of Conservation Concern for Wallkill River National Wildlife Refuge

Species	Common Name	Global Rank ¹	Federal ²	New York Rank/ Status ³		New Jersey Rank /Status ³		BCC 2002 BCR 28 ⁴	PIF Area 17 ⁵
				State Rank	State Listing	State Rank	State Listing		
<i>Anas rubripes</i>	American black duck	G4				S4	GS-RP		IB
<i>Ardea herodias</i>	Great blue heron	G5		S5	P	S2B S4N	SC		IV
<i>Asio flammeus</i>	Short-eared owl	G5		S2	E	SHB S3N	E	X	
<i>Asio otus</i>	Long-eared owl	G5			P	S2B S2N	T		IV
<i>Bartramia longicauda</i>	Upland sandpiper	G5		S3B	T	S1B	E	X	IB
<i>Botaurus lentiginosus</i>	American bittern	G4			SC	S2B	E		IV
<i>Buteo lineatus</i>	Red-shouldered hawk	G5			SC	S1B S2N	E		IV
<i>Buteo platypterus</i>	Broad-winged hawk	G5			P	S3B	SC		IV
<i>Caprimulgus carolinensis</i>	Chuck-will's-widow	G5		S2	P		RP	X	
<i>Caprimulgus vociferus</i>	Whip-poor-will	G5			SC	S4B	RP	X	IV
<i>Catharus fuscescens</i>	Veery	G5			P	S3B	SC		IV
<i>Catharus minimus</i>	Gray-cheeked thrush				P		SC		
<i>Chordeiles minor</i>	Common nighthawk	G5			SC	S3B	SC		IV
<i>Circus cyaneus</i>	Northern harrier	G5		S3B S3N	T	S1B S3N	E		IV
<i>Cistothorus platensis</i>	Sedge wren	G5		S3B SAN	T	S1B	E	X	IIC
<i>Coccyzus erythrophthalmus</i>	Black-billed cuckoo				P		RP	X	
<i>Contopus cooperi</i>	Olive-sided flycatcher				P		RP	X	IB
<i>Contopus virens</i>	Eastern wood-pewee				P		RP		IIA
<i>Dendroica cerulea</i>	Cerulean warbler	G4			SC	S3B	SC	X	IB
<i>Dendroica discolor</i>	Prairie warbler				P		RP	X	IA
<i>Dendroica virens</i>	Black-throated green warbler	G5			P	S3B	SC		IV
<i>Dolichonyx oryzivorus</i>	Bobolink	G5			P	S2B	T		IV
<i>Empidonax minimus</i>	Least flycatcher	G5			P	S3B	SC		IV
<i>Empidonax traillii</i>	Willow flycatcher				P		RP		IA
<i>Empidonax virescens</i>	Acadian flycatcher				P		RP	X	
<i>Eremophila alpestris</i>	Horned lark	G5			SC	S3B S4N	SC		IV
<i>Falco peregrinus</i>	Peregrine falcon	G4		S3B SZN	E	S1B	E	X	IV
<i>Falco sparverius</i>	American kestrel	G5			P	S3B	SC		IV
<i>Haliaeetus leucocephalus</i>	Bald eagle	G5		S2S3B S2N	T	S1B S2N	E		III
<i>Helmitheros vermivorus</i>	Worm-eating warbler	G5			P	S3B	RP	X	IA
<i>Hylocichla mustelina</i>	Wood thrush				P		RP	X	IA
<i>Icteria virens</i>	Yellow-breasted chat	G5			SC	S3B	SC		IV
<i>Icterus galbula</i>	Baltimore oriole				P		RP		IIA
<i>Ixobrychus exilis</i>	Least bittern	G5		S3B S1N	T	S3B	SC		IV

Table A.1. Animal Species of Conservation Concern for Wallkill River National Wildlife Refuge

Species	Common Name	Global Rank ¹	Federal ²	New York Rank/ Status ³		New Jersey Rank /Status ³		BCC 2002 BCR 28 ⁴	PIF Area 17 ⁵
				State Rank	State Listing	State Rank	State Listing		
<i>Lanius ludovicianus</i>	Loggerhead shrike	G5		S1B SZN	E	S1B S1N	E		IV
<i>Limnothlypis swainsonii</i>	Swainson's warbler				P		RP	X	
<i>Melanerpes erythrocephalus</i>	Red-headed woodpecker	G5			SC	S2B S2N	T	X	IB
<i>Nyctanassa violaceus</i>	Yellow-crowned night-heron	G5		S2	P	S2B	T		IV
<i>Nycticorax nycticorax</i>	Black-crowned night-heron	G5			P	S3B S4N	T		IV
<i>Oporornis formosus</i>	Kentucky warbler	G5		S2	P	S3B	SC	X	IB
<i>Pandion haliaetus</i>	Osprey	G5			SC	S2B	T		IV
<i>Parula Americana</i>	Northern parula	G5			P	S3B	SC		
<i>Passerculus sandwichensis</i>	Savannah sparrow	G5			P	S2B S4N	T		IV
<i>Petrochelidon pyrrhonota</i>	Cliff swallow	G5			P	S2B	SC		IV
<i>Pipilo erythrophthalmus</i>	Eastern towhee				P		RP		IIA
<i>Piranga olivacea</i>	Scarlet tanager				P		RP		IIB
<i>Podilymbus podiceps</i>	Pied-billed grebe	G5		S3B S1N	T	S1B S3N	E		IV
<i>Pooecetes gramineus</i>	Vesper sparrow	G5			SC	S1B S2N	E		IV
<i>Protonotaria citrea</i>	Prothonotary warbler				P		RP	X	
<i>Rallus elegans</i>	King rail	G4 G5		S1B SZN	T	S3B	SC		IB
<i>Scolopax minor</i>	American woodcock	G5				S5	GS-RP		IB
<i>Seiurus motacilla</i>	Louisiana waterthrush				P		RP	X	IIB
<i>Sphizella pusilla</i>	Field sparrow				P		RP		IIA
<i>Sphyrapicus varius</i>	Yellow-bellied sapsucker				P		RP	X-B	
<i>Strix varia</i>	Barred owl	G5			P	S3B	T		IV
<i>Sturnella magna</i>	Eastern meadowlark	G5			P	S3B S4N	SC		IV
<i>Thryomanes bewickii</i>	Bewick's wren				P		RP	X	
<i>Toxostoma rufum</i>	Brown thrasher				P		RP		IIA
<i>Troglodytes troglodytes</i>	Winter wren	G5			P	S3B S4N	SC		IV
<i>Tryngites subruficollis</i>	Buff-breasted sandpiper				P		RP	X	
<i>Tyto alba</i>	Common barn owl	G5		S3	P	S3B	SC		IV
<i>Vermivora chrysoptera</i>	Golden-winged warbler	G4			SC	S3B	SC	X	IA
<i>Vermivora pinus</i>	Blue-winged warbler				P		RP		IA
<i>Vireo solitarius</i>	Blue-headed vireo	G5			P	S3B	SC		
<i>Wilsonia canadensis</i>	Canada warbler	G5			P	S3B	SC		

Appendix B



A view of the Wallkill River in early fall, as the trees begin to change color.

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Appropriate Use and Compatibility Determinations

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Introduction

About the Appropriate Refuge Uses Policy

The policy on appropriate refuge uses describes the initial process the refuge manager follows in first considering whether to allow a proposed use on a refuge. We must find a use appropriate before undertaking its compatibility review. This policy clarifies and expands on the compatibility policy (603 FW 2.10D (1)), which describes when refuge managers should deny a proposed use without determining compatibility. If we find a proposed use inappropriate, we will not allow it, and will not prepare a compatibility determination.

By following the process for finding the appropriateness of a use, we strengthen and fulfill the mission of the Refuge System. By screening out proposed uses not appropriate on the refuge, the refuge manager avoids unnecessary compatibility reviews. Although a refuge use may be both appropriate and compatible, the refuge manager retains the authority to not allow the use or to modify the use. For example, on some occasions, two appropriate and compatible uses may conflict with each other. In those situations, even though both uses are appropriate and compatible, the refuge manager may need to limit or curtail entirely one of the uses to provide the greatest benefit for refuge resources and the public. See the compatibility policy (603 FW 2.11G) for information about resolving those conflicts.

For the proposed uses that we did consider while preparing this CCP, the appropriate use findings are below. If, in the future, there is a request for a refuge use that we did not consider while preparing this CCP, we will apply the procedure in the Appropriate Use policy and make an appropriateness finding without additional public review and comment; however, if we find a proposed use appropriate, we must still determine that it is compatible. The compatibility determination includes an opportunity for public involvement per 603 FW 1 Part 1.9B. See our planning policy (602 FW 1, 3, and 4) for additional details on refuge planning.

About Compatibility Determinations

The Refuge Improvement Act and its regulations require an affirmative finding by the refuge manager of the compatibility of an activity before we allow it on a national wildlife refuge. We document that finding in a report called a “compatibility determination.” 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” (Refuge Improvement Act). The Act defines six priority, wildlife-dependent uses that are to receive our enhanced consideration on refuges: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. Those priority uses may be authorized on a refuge when they are compatible and consistent with public safety. When the refuge manager makes the compatibility determination, he or she will insert the required maximum 10-year re-evaluation date for uses other than wildlife-dependent recreational uses, or the 15-year maximum re-evaluation date for wildlife-dependent recreational uses. The refuge manager, however, may re-evaluate the compatibility of a use at any time (603 FW 2, parts 2.11 and 2.12). For example, we may revisit a decision sooner than the mandatory date, or even before we complete the CCP process, if new information reveals unacceptable impacts or incompatibility with refuge purposes.

Moreover, we may not allow all the uses that we have determined compatible. The refuge manager has the discretion to allow or deny any use based on other considerations, such as public safety, policy, or available funding. Nevertheless, all uses that we allow must be determined compatible. Except for the consideration of consistency with state laws and regulations as provided for in subsection (m) of the Act, neither this Act nor the Refuge Recreation Act requires any other determinations or findings by the refuge manager for wildlife-dependent recreation to occur.

Please note that the archaeological and historic structure research the Service conducts does not need a compatibility determination. Archaeological research by non-Service personnel on refuge property will need a compatibility determination. Such projects require an application for an Archaeological Resource Protection Act (ARPA) Permit from our regional historic preservation officer and a Special Use Permit from the refuge manager. The issue of compatibility can be determined at that time.

Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife RefugeUse: Cross-Country Skiing and Snowshoeing to Promote Priority Public Uses

This exhibit is not required for wildlife-dependent recreational uses, forms of 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 uses?	X	
(b) Do the uses comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Are the uses consistent with applicable Executive orders and Department and Service policies?	X	
(d) Are the uses consistent with public safety?	X	
(e) Are the uses consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the uses or is this the first time these uses have been proposed?	X	
(g) Are the uses manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Do the uses contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or are the uses beneficial to the refuge's natural or cultural resources?	X	
(j) Can the uses be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D. for description), compatible, wildlife-dependent recreation into the future?	X	

When we do not have jurisdiction over a 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 X No

When the refuge manager finds a 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 uses are:

Not Appropriate Appropriate X

Refuge Manager: Edna O'Hara

Date: 1/27/09

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: John M. Kennedy

Date: 1-29-09

A compatibility determination is required before the use may be allowed.

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Cross-Country Skiing and Snowshoeing to Promote Priority Public Uses

Narrative

Cross-country skiing and snowshoeing facilitate access to refuge trails during the winter months when snow covers the ground, making it more difficult for visitors to walk on trails. Facilitating trail access year round encourages visitors to partake in priority public uses -- such as wildlife observation, wildlife photography and interpretation -- year round. This exposure leads to a better understanding of the National Wildlife Refuge System in general and to the refuge more specifically.

Although cross-country skiing and snowshoeing could potentially cause wildlife disturbances, these uses occur during a time of year when many species are either not present on the refuge or are not as active as during other times of the year. The refuge will make every effort to minimize disturbance to wildlife that do use the refuge at this time of year. Trails will be well-marked or otherwise identifiable to ensure that trail users follow designated trail corridors and therefore avoid impacting adjoining habitats. The refuge will monitor habitats abutting trails to ensure that conditions do not pose adverse effects to wildlife populations and their habitats, especially threatened or endangered species. If certain species of concern are found utilizing habitats near trails, the trails will be closed or rerouted to ensure habitat and wildlife protection.

The refuge will minimize potential conflicts among public uses by using signs and a variety of other media outlets to notify the public of which public uses are allowed on the refuge, when and where they can occur, and how.

Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife RefugeUse: Livestock Grazing for Habitat Management

This exhibit is not required for wildlife-dependent recreational uses, forms of 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?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(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?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D. for description), compatible, wildlife-dependent recreation into the future?	X	

When we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control it. 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 generally will not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes X 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 X

Refuge Manager: Edgar O. H. H. H.

Date: 1/27/09

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: James M. Kennedy

Date: 1-29-09

A compatibility determination is required before the use may be allowed.

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Livestock Grazing for Habitat Management

Narrative

Grazing has been found to improve microtopography in bog turtle habitat. Bog turtle habitat is in an intermediate state of succession, and in some cases is threatened by invasive exotic plants (USFWS 2001). Unless natural processes (flooding by beaver, fire, grazing by wildlife, etc.) set succession back and exotic plants are controlled, the habitat may become less suitable, and eventually unsuitable, for bog turtles. Active management and maintenance, such as grazing, may be required at some sites to replace the natural processes that have been lost and to control exotic plants in order to restore or maintain habitat quality.

By controlling vegetation, grazing may also benefit grassland birds such as horned lark and vesper sparrow that prefer to nest in fields with short, sparse vegetation (Skinner et al. 1984, Herkert 1991, Herkert et al. 1993). Wakeley (1978), Baker and Brooks (1981), and Bechard (1982) demonstrated that tall, dense vegetation impedes the ability of several species of *Buteo* hawks to capture prey. Thus, grazing may also benefit wintering raptors by increasing availability of rodent prey.

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Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife RefugeUse: Motorized and Non-Motorized Boating to Promote Priority Public Uses

This exhibit is not required for wildlife-dependent recreational uses, forms of 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? <i>On refuge ponds and in areas of the Wallkill River above the mean high water line (flooded areas). The refuge also has jurisdiction over boating activities in areas of the river and its tributaries where the refuge holds title.</i>	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(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?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D. for description), compatible, wildlife-dependent recreation into the future?	X	

When 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 X 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 X

Refuge Manager: Edward R. Henry

Date: 1/27/09

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: Justin M. Kennedy

Date: 1-29-09

A compatibility determination is required before the use may be allowed.

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Motorized and Non-Motorized Boating to Promote Priority Public Uses

Narrative

The refuge has jurisdiction over boating on refuge ponds and in areas of the Wallkill River above the mean high water line (flooded areas). The refuge also has jurisdiction over boating activities in areas of the river and its tributaries where the refuge holds title. Therefore, this Appropriate Use finding applies to those areas.

Although motorized and non-motorized boating are not themselves priority public uses, they facilitate participation in priority wildlife-dependent recreation, including all six of the Refuge System's priority public uses. For example, non-motorized boating will provide a means for hunters and anglers to reach designated areas during regulated seasons. Boating in general increases opportunities for refuge visitors to observe and photograph wildlife.

Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife RefugeUse: Haying for Habitat Management

This exhibit is not required for wildlife-dependent recreational uses, forms of 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?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(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?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D. for description), compatible, wildlife-dependent recreation into the future?	X	

When 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 X 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 X

Refuge Manager: Edward J. Hays

Date: 1/27/09

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: Paul M. Keene

Date: 1-29-09

A compatibility determination is required before the use may be allowed.

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Haying for Habitat Management

Narrative

Grassland birds have declined more consistently and over a wider geographic area than any other group of North American birds over the last 30 years (Robbins et al. 1986, Askins 1993, Knopf 1995, Askins 1997, Sauer et al. 1997). As a result, most grassland birds appear on lists of rare and declining species (NYSDEC 1997, Pashley et al. 2000, U.S. NABCI Committee 2000, U.S. Fish and Wildlife Service 2002). Moreover, all of these species can be found at the refuge. However, without active management, refuge grasslands will soon become dominated by invasive species or dense shrubland (Mitchell and Shryer 2000). Without these high-quality early and intermediate successional habitats, the refuge would no longer provide suitable habitat for grassland-dependent birds, wintering raptors or bog turtles.

Haying, combined with mowing, is a useful and effective grassland management technique (USFWS 1982). Mitchell et al. (2000) state that haying and mowing are economic means of controlling the invasion of grasslands by forbs and woody plants. Further, haying is generally a more convenient technique to apply than prescribed fire or grazing. Herkert et al. (1993) recommend rotational haying and mowing as a grassland management alternative with subunits left idle. This strategy may provide a complex of grassland successional stages to meet the respective nesting requirements of diverse species of grassland birds. More specifically, haying and mowing are recommended techniques for managing grasslands used by nesting northern harrier (Berkey et al. 1993, Dechant et al. 2001a), upland sandpiper (Kirsch and Higgins 1976, Dechant et al. 2001b), short-eared owl (Tate 1992, Dechant et al. 2001c), horned lark (Dinkins et al. 2001), grasshopper sparrow (Dechant et al. 2001d, Vickery 1996), Henslow's sparrow (Smith 1992, Herkert 2001), vesper sparrow (Camp and Best 1993, Dechant et al. 2001e), savannah sparrow (Swanson 2001), bobolink (Bollinger and Gavin 1992, Dechant et al. 2001f), and eastern meadowlark (Lanyon 1995, Hull 2000).

Haying can also be used to manage bog turtle habitat. Bog turtle habitat is in an intermediate state of succession, and in some cases is threatened by invasive exotic plants (USFWS 2001). Unless natural processes (flooding by beaver, fire, grazing by wildlife, etc.) set succession back and exotic plants are controlled, the habitat may become less suitable and, eventually, unsuitable for bog turtles. Active management and maintenance, such as haying and mowing, may be required at some sites to replace the natural processes that have been lost and to control exotic plants to restore or maintain habitat quality.

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Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife RefugeUse: Mosquito Management according to Service Policy

This exhibit is not required for wildlife-dependent recreational uses, forms of 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?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(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?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D. for description), compatible, wildlife-dependent recreation into the future?	X	

When 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 X 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 X

Refuge Manager: Edna R. Heng

Date: 1/27/09

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: Janet M. Kenna

Date: 1-29-09

A compatibility determination is required before the use may be allowed.

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Mosquito Management according to Service Policy

Narrative

As the West Nile virus and other mosquito-borne diseases spread across the country, national wildlife refuges may come under increasing pressure to work with other local and state agencies to manage mosquito populations. In addition to the West Nile virus vectors associated with those mosquito populations, mosquitoes may cause other human or wildlife health concerns including mortality to migratory birds.

On October 15, 2007, the Service published in the Federal Register its “Draft Mosquito and Mosquito-Borne Disease Management Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997.” Until the draft policy is final, we will follow the “Interim Guidance for Mosquito Management on National Wildlife Refuges,” prepared in spring 2005. This document provides refuges with interim guidance on addressing mosquito-associated health threats in a consistent manner. Like the draft policy, the guidance states that refuges will not conduct mosquito monitoring or control unless it is necessary and compatible to protect the health of a human, wildlife, or domestic animal population. If there is a declared health emergency, the Service will work with local and state mosquito managers to minimize any risks to human health.

Local mosquito control districts in the State of New Jersey often want to implement a full range of mosquito control measures, including pesticide use, on refuge lands. The Service is concerned with the direct and indirect impacts on the mosquitoes and other invertebrates that serve as a vital food source for birds, amphibians and reptiles. In an effort to work cooperatively with local officials and address their concerns, the refuge has issued, annually, a special use permit to the Sussex County Office of Mosquito Control to access the refuge to monitor larval and adult mosquitoes. The refuge, within the confines of policy, regulations and interim guidance, requires that any mosquito control or monitoring have a basis in sound scientific methods when we issue a permit. Dip counts and monitoring of populations are essential parts of any mosquito control program involving refuge lands. The refuge permits the use of larvicides, currently Bti, but not adulticides.

The primary focus of the long-term solution to suppress mosquito populations at the refuge is to restore wetland hydrology in the habitats that produce the greatest abundance of mosquitoes. Fish and other species play a major role in controlling mosquito populations, and the Service often restores wetlands to allow fish to feed on mosquito larvae, which reduces mosquito populations.

Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife RefugeUse: Research Conducted by Non-Service Personnel

This exhibit is not required for wildlife-dependent recreational uses, forms of 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?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(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?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D. for description), compatible, wildlife-dependent recreation into the future?	X	

When 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 X 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 X

Refuge Manager: Edward R. Heng

Date: 1/27/09

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: Janet M. Kennedy

Date: 1-29-09

A compatibility determination is required before the use may be allowed.

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Research Conducted by Non-Service Personnel

Narrative

The Service encourages and supports research and management studies on refuge lands that will improve and strengthen decisions on managing natural resources. In addition, facilitating research is among the refuge's purposes. The refuge manager encourages and seeks research that clearly relates to approved refuge objectives, improves habitat management, and promotes adaptive management. Priority research addresses information on better managing biological resources (species, habitats, issues) that are important to the Department of Interior, the National Wildlife Refuge System and state fish and game agencies.

Researchers will submit a final report to the refuge upon completing their work. For long-term studies, we may also require interim progress reports. We expect researchers to publish in peer-reviewed publications. All reports, presentations, posters, articles or other publications will acknowledge the Refuge System and the Wallkill River refuge as partners in the research. All posters that involve a Service funding source will adhere to Service graphics standards. We will insert this requirement to ensure that the research community, partners, and the public understand that the research could not have been conducted without the establishment of the refuge, its operational support, and that of the Refuge System.

Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife RefugeUse: Furbearer Management to Protect Trust Resources

This exhibit is not required for wildlife-dependent recreational uses, forms of 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?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(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?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D. for description), compatible, wildlife-dependent recreation into the future?	X	

When 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 X 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 X

Refuge Manager: Edna O'Hara

Date: 1/27/09

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: Janet M. Kurne

Date: 1-29-09

A compatibility determination is required before the use may be allowed.

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Furbearer Management to Protect Trust Resources

Narrative

Furbearer management is conducted on the refuge as a management tool by state-licensed trappers from New York or New Jersey. Since trappers have the potential to profit financially from this use the refuge is required to complete an Appropriate Use and Compatibility Determination.

Furbearer management through trapping is permitted on the refuge in New York and New Jersey. Furbearer management becomes necessary when a furbearer threatens a particular habitat type, such as an impoundment, by burrowing into the dikes and enabling water to flow out of an impoundment. This destroys habitat that the refuge creates and maintains for waterfowl and other species of waterbirds that are mentioned in the refuge's purposes. An example of this is when a beaver builds a dam in an impoundment. The refuge may also conduct furbearer management when there is a nuisance complaint by a private landowner due to beaver activity on the refuge.

Furbearer management is being proposed in part to eliminate or reduce damage to refuge resources caused by overabundant species such as muskrats and beavers. Muskrats feed primarily on aquatic plants. In marsh environments, their feeding and lodge construction can aid wetland managers in obtaining desired amounts of open water and vegetation. In some portions of their range, however, muskrats can become excessively abundant and actually destroy the aquatic vegetation upon which they and other wildlife are dependent (MDC 2004). Damage from beaver induced flooding is also a problem on the refuge as well as on some adjacent private lands. Other species that could be involved in such a program could include fox or coyote, both of which can devastate bird populations. A furbearer management program will be used as a tool to manage habitat and maintain the predator-to-prey balance.

Literature Cited

Missouri Department of Conservation (MDC). 2004. Muskrat and Beaver Management in Wetlands: Planning Ahead for Wildlife Survival.

Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife RefugeUse: Dog Walking on Liberty Loop Nature Trail

This exhibit is not required for wildlife-dependent recreational uses, forms of 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?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(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?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D. for description), compatible, wildlife-dependent recreation into the future?	X	

When 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 X 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 X

Refuge Manager: Edward R. Heng

Date: 1/27/09

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: James M. Kennedy

Date: 1-29-09

A compatibility determination is required before the use may be allowed.

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: Wallkill River National Wildlife Refuge

Use: Dog Walking on Liberty Loop Nature Trail

Narrative

A portion of the Liberty Loop Nature Trail runs concurrent with a portion of the Appalachian Trail (AT). The AT enters the refuge at the Liberty Loop Nature Trail and follows the Liberty Loop Nature Trail for about 1.5 miles. The AT then continues along Oil City Road to where it crosses the Wallkill River; continues northwest on State Line Road, then onto Carnegie Street where it reenters the forest. The AT is a part of America's cultural legacy and the trail is a cultural resource of national significance. The Wallkill River refuge is the only refuge through which the AT runs, and the trail provides an excellent opportunity to educate hikers about the refuge and the National Wildlife Refuge System.

The Appalachian Trail allows dog walking along almost all of its 2,100-mile length, except in some wilderness and backcountry areas. Many people hike most of the AT, or large parts of it, with their dogs. Local residents and other refuge visitors who are not through hikers have historically parked at the Liberty Loop Nature Trail parking lot to walk their dogs on the AT. Since the AT does not connect directly to the refuge parking lot, dog walkers who park at the refuge parking lot have been forced to walk on Oil City Road to access the AT. This poses a public safety hazard as this portion of Oil City Road is a straightaway with no shoulder. Due to the nature of the road, parking on the side of the road to access the AT would also pose a public safety hazard. Another issue is that the AT runs concurrent with the Liberty Loop Nature Trail for about 1.5 miles, after which the refuge trail continues as a loop for about another mile and the AT heads off the refuge to the southeast. Dog walkers have historically been forced to backtrack 1.5 miles on the AT rather than completing the loop trail by walking half that distance to the parking lot. Through the final CCP we will open the entire Liberty Loop Nature Trail to dog walking to permit access to the entire Liberty Loop Nature Trail for dog walkers and to facilitate appreciation for the AT as a cultural resource.

Because the Liberty Loop Nature Trail follows a dike system with limited habitat value, the potential impacts to wildlife and their habitats are minimal. In the Compatibility Determination for this use, located later in this appendix, we nevertheless discuss ways in which we will minimize potential impacts from dog walking. For example, we will require that dogs be leashed and under the owner's control at all times.

Compatibility Determination

Use

Public Hunting for Deer, Turkey and Woodcock

Refuge Name

Wallkill River National Wildlife Refuge

Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the the past. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

Refuge Purpose(s)

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to conserve and enhance populations of fish, wildlife, and plants within the refuge, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish- and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

“the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions....” 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986)

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” 16 U.S.C. 742f(a)(4) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services..” 16 U.S.C. 742f(b)(1) (Fish and Wildlife Act of 1956)

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

National Wildlife Refuge System Mission

The mission of the National Wildlife 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.”

Description of Use

(a) What is the use? Is it a priority public use? *Primary Use:* The primary use is public hunting for deer, turkey and woodcock. (Black bear hunting is covered in a separate compatibility determination.) Hunting is a priority 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).

Supporting Uses: Boating (motorized and non-motorized)

(b) Where will the use be conducted? The refuge permits hunting for deer, turkey and woodcock throughout the New Jersey portion of the refuge on Service-owned lands, except where identified as a threat to public safety or wildlife management (map B-1). In particular, hunting is not allowed in the 335-acre Liberty Marsh complex. Annual hunt plans and updated maps will show what areas are closed in any particular year. Currently, the Service does not allow hunting on Service-owned lands in the State of New York; however, with the acquisition of additional lands in that state, the refuge may consider opening those lands to hunting according to State and Service regulations.

(c) When will the use be conducted? Hunting for deer, turkey and woodcock will be conducted during New Jersey State seasons for those species, in accordance with federal and state regulations, unless safety or overriding resource concerns would make hunting incompatible. In cooperation with the State of New Jersey, we may adjust hunt season dates and bag limits in the future as needed to achieve balanced wildlife population levels within habitat carrying capacities.

(d) How will the use be conducted? We will continue to conduct the use according to state and federal regulations. Federal regulations in 50 CFR pertaining to the National Wildlife Refuge System Administration Act, as well as existing, specific refuge regulations will apply. No change from the existing hunt program for deer, turkey or woodcock is proposed; however, the refuge manager may, upon annual review of the hunting program, impose further restrictions on hunting, recommend that the refuge be closed to hunting, or further liberalize hunting regulations within the limits of state law. We will restrict hunting if it becomes inconsistent with other, higher priority refuge programs or endangers refuge resources or public safety.

Boat access for hunting is available at a number of locations throughout the refuge. Game stocking and night hunting is prohibited.

To minimize visitor conflicts, the refuge may close some trails to the public during the shotgun season for deer.

(e) Why is this use being proposed? Hunting is a priority public use defined by The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997. If compatible, hunting is to receive enhanced consideration over other general public uses in refuge planning and management. In addition, refuge purpose #5 (see above) instructs the refuge to “provide opportunities for fish and wildlife-oriented recreation.” Hunting provides that opportunity. In northwestern New Jersey, where the refuge is located, hunting is an historic, traditional, sustainable activity.

A refuge hunt program also helps cull certain wildlife populations, such as white-tailed deer. An overabundance of deer results in areas of intense browsing that negatively impacts plant communities. Over-browsing also yields vegetation monotypes composed only of the plants that are unpalatable to deer. Over-browsing also causes indirect impacts to refuge fauna. Reducing deer populations improves the forest understory and shrubland’s structural diversity and complexity. Furthermore, providing an opportunity to hunt at the refuge promotes the Service mission.

Availability of Resources

The hunt program at Wallkill River refuge will require the following staff and financial resources:

Biology (planning, monitoring, reporting) (.1875 FTE).....	\$9,000
Law Enforcement (.1875 FTE)	\$9,000
Maintenance (parking areas, signs) (.075 FTE).....	\$3,750
Administration (permits, public relations)	
- Administrator (.30 FTE)	\$9,000
- Refuge Manager (.0375 FTE)	\$3,000
Materials.....	\$3,750
TOTAL.....	\$37,500

The financial and staff resources necessary to provide and administer this use at its current level and at the level described in the final CCP are now available and we expect them to continue in the future subject to the availability of appropriated funds.

Anticipated Impacts of the Use

Because the refuge has been open to hunting since 1993, and hunting occurred in the Wallkill area for many decades before the refuge's creation, we expect no additional impacts. Some disturbance of non-target wildlife species and impacts on vegetation may occur; however, these impacts should be minimal, because hunting pressure is moderate, occurs outside the breeding season, and specific refuge regulations prohibit the use of ATVs and permanent tree stands, the most likely items to damage refuge vegetation. Hunting also helps to keep populations of browsing species such as deer within the habitat's carrying capacity, thus reducing excessive damage to vegetation caused by over-browsing, and maintaining understory habitat for other species.

Our deer seasons generally consist of these dates: (based on 2006-07 New Jersey state seasons):

Deer:	
Fall Bow	Sept. 9 – Sept. 29
Permit Bow	Oct. 28 – Dec. 23 & Dec. 26 – Dec. 31
Permit Muzzleloader	Nov. 27, 28 & Dec. 11, 12, 16-23, 26-31 & Jan. 1-5
Six Day Firearm	Dec. 4 – 9
Permit Shotgun	Dec. 13-15 & Jan. 6 – 13
Winter Bow	Jan. 1 – 31

There are approximately 163 days open to deer hunting. The refuge issues between 400 and 580 permits each year to deer hunters. The average take of deer each year on the refuge is 70 animals. All deer hunters are required to check their animals at a state-administered check station. State biologists track deer harvests throughout New Jersey, and adjust season and bag limits accordingly. In general, the allowed take is two antlered deer per day with the potential for incentive deer based on hunter performance. The refuge is located in Deer Management Zone #2, where the total deer harvest for 2005–2006 was 2,446 animals. The refuge hunt constitutes a small percentage (2.9%) of the zone's overall annual harvest, and therefore has little impact on local or regional deer populations.

There are approximately 41 days open to turkey hunting (35 in spring season and 6 in fall season) annually. The seasons are generally:

Spring Turkey	April 16 – May 25
Fall Turkey	Oct. 29 – Nov. 3

By the mid-1800s, turkeys had disappeared from New Jersey due to changing habitat and over-harvesting for food (http://www.nj.gov/dep/fgw/turkey_info.htm). State biologists, in cooperation with the *NJ Chapter of the National Wild Turkey Federation*, reintroduced wild turkeys in 1977 by releasing 22 birds. In 1979, biologists and technicians began to live-trap and relocate birds to establish populations throughout the state. By 1981, the population was able to support a spring hunting season, and in December 1997, a limited fall season began. Wild turkeys now abound throughout the state, wherever there is suitable habitat. The estimated state population is between 20,000 and 23,000, with an annual harvest of more than 3,000 statewide. The refuge sells approximately 130 turkey permits per year, with an average of about 10 turkeys harvested per year, representing only 0.05 percent of the total state population. The allowed take for this species follows New Jersey hunting regulations, which may change. For the 2007-08 season, the limit for turkey was one per day.

Woodcock season is generally set for Oct. 19 – Nov. 11, with approximately 24 days open annually to woodcock hunting. New Jersey has two woodcock hunting zones, north and south of Route 70, respectively. The refuge is in the north zone. Of the 3,794 woodcock taken during the 2005–2006 hunt season, north zone hunters took 65 percent (2,450), south zone hunters took 19 percent (711), and hunters that pursued woodcock in both zones took 17 percent (632). No specific figures are available for how many woodcock came from the refuge. Fewer than 90 hunters participated each year in the refuge’s woodcock hunting seasons 2003-4 and 2006-7. The allowed take for this species follows New Jersey hunting regulations, which may change. For the 2007-2008 season, the limit for woodcock was three per day.

Impacts from hunting may include disturbance of non-target species in the course of tracking prey, trampling of vegetation, possible creation of unauthorized trails by hunters, potential reduction of wildlife observation and photography opportunities, littering and possible vandalism and subsequent erosion. Shotgun noise from hunting could cause some wildlife disturbance as well. However, reduction in the size of the deer herd will benefit deer and other species of wildlife by reducing competition for food, and by increasing the health of the remaining deer herd. Many landowners suffer landscape damage due to deer on a regular basis; transmission of Lyme disease is a major issue with large deer populations; deer starvation can occur when deer populations are high and food supplies dwindle in bad weather; and deer-vehicle collisions become more common and problematic when deer herds are over-populated. Overall, the refuge has not experienced any of the adverse impacts mentioned above and instead expects a beneficial impact to the plants and wildlife of the refuge resulting from control of the deer herd.

Public Review and Comment

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft Comprehensive Conservation Plan/Environmental Assessment for Wallkill River National Wildlife Refuge.

Determination

_____ Use is not compatible

 X Use is compatible, with the following stipulations

Stipulations Necessary to Ensure Compatibility

Seasons and bag limits for deer, turkey and woodcock will be managed in accordance with Federal and State regulations to ensure that refuge hunts are compatible with the principles of sound wildlife management and otherwise in the public interest (50 C.F.R. § 32.1.).

Safety zones are set by the state and it is the responsibility of each hunter to be aware of and to follow these regulations.

The refuge’s hunt program will be reviewed annually to ensure management goals are being achieved and to affirm that the hunt program is providing a safe, high-quality hunting experience for participants. Hunt season dates, bag limits and/or number of hunters per day will be adjusted as needed to achieve balanced wildlife population levels within carrying capacities.

The hunt programs for turkey, deer, and woodcock can cause some soil compaction. With hunter density estimated to be an average of one hunter per 1,000 acres per day throughout the hunting season, impacts will be minimal. Refuge regulations will not permit the use of ATVs on the refuge. Vehicles will be confined to existing roads and parking lots.

State regulations help to mitigate user conflicts by requiring that hunters remain a certain distance from roads, trails and buildings. We do not currently find it necessary to close the refuge to any other public uses during the hunt season. If that need did arise, we would issue news releases and post information at the Visitor Contact Station and trail kiosks to notify visitors of closings. During the hunt season, we will make every attempt to provide a law enforcement presence to ensure safety and compliance.

We will allow hunting only in designated areas and only in areas that are large enough to provide adequate accessibility and quality hunting opportunities based on safety and accessibility. We will not allow hunting in sensitive habitats or where it would pose a threat to public safety.

Justification

Hunting is a priority public use as defined by The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997. If compatible, hunting will receive our enhanced consideration over other general public uses in refuge planning and management. It will not cause an undue administrative burden. Annual adjustments can be made in the hunting program to ensure its continued compatibility.

The stipulations discussed above will help minimize the impacts of this use on wildlife and their habitats. These stipulations also help ensure that hunting will not materially interfere with the refuge's mission and purposes. Hunting will contribute to the refuge purposes by promoting healthy populations of game species and woodcock (refuge purposes #1 and #4) and by providing opportunities for scientific research and wildlife-dependent recreation (refuge purpose #5). See page B-30 for a detailed description of refuge purposes.

Project Leader


(Signature)

1/27/09
(Date)

Concurrence

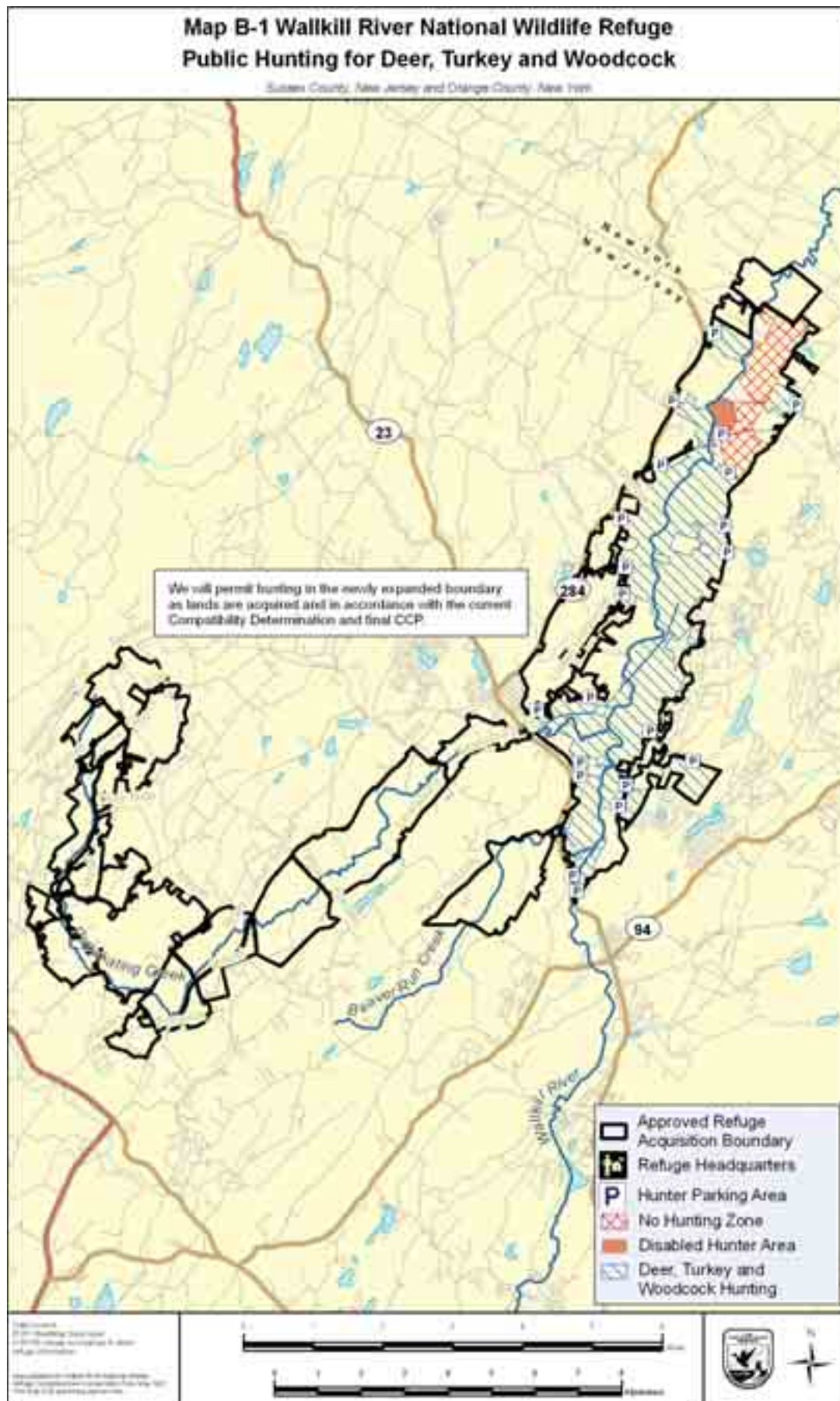
Regional Chief


(Signature)

1/29/2009
(Date)

Mandatory 15-year re-evaluation date

Jan. 29, 2024
(Date)



Compatibility Determination

Use

Public Hunting for Migratory Birds

Refuge Name

Wallkill River National Wildlife Refuge

Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

Refuge Purpose(s)

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to conserve and enhance populations of fish, wildlife, and plants within the refuge, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

“the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions....” 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986)

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” 16 U.S.C. 742f(a)(4) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services.” 16 U.S.C. 742f(b)(1) (Fish and Wildlife Act of 1956)

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

National Wildlife Refuge System Mission

The mission of the National Wildlife 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.”

Description of Use

(a) What is the use? Is it a priority public use? *Primary Use:* The primary use is public hunting for migratory birds. Hunting is a priority 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).

Supporting Uses: Boating (motorized and non-motorized)

(b) Where will the use be conducted? The refuge permits hunting for migratory birds on Service-owned lands in the State of New Jersey, except where identified as a threat to public safety or wildlife management concerns (map B-2). In particular, hunting is not allowed in the 335-acre Liberty Marsh complex. Annual hunt plans and updated maps will show which areas are closed in any particular year. Currently no hunting for migratory birds is allowed on Service-owned lands in the State of New York; however, with the acquisition of additional lands in that state, the refuge may consider opening those lands to hunting, according to state and Service regulations.

(c) When will the use be conducted? Hunting will be conducted during New Jersey State seasons for migratory game birds (including waterfowl) and resident geese, in accordance with federal and state regulations, unless safety or overriding resource concerns would make hunting incompatible. In cooperation with the State of New Jersey, we may adjust hunt season dates and bag limits in the future as needed to achieve balanced wildlife population levels within habitat carrying capacities.

(d) How will the use be conducted? We will continue to conduct the use according to state and federal regulations. Federal regulations in 50 CFR pertaining to the National Wildlife Refuge System Administration Act, as well as existing, specific refuge regulations will apply (including 50CFR 32.1-32.3). No change from the existing hunt program for migratory birds is proposed. However, the refuge manager may, upon annual review of the hunting program, impose further restrictions on hunting, recommend that the refuge be closed to hunting, or further liberalize hunting regulations within the limits of state law. We will restrict hunting if it becomes inconsistent with other, higher priority refuge programs or endangers refuge resources or public safety.

Boat access for waterfowl hunting is available at a number of locations throughout the refuge. Game stocking and night hunting will be prohibited.

(e) Why is this use being proposed? Hunting is a priority public use defined by The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997. If compatible, hunting for migratory birds is to receive our enhanced consideration over other general public uses in refuge planning and management. In addition, refuge purpose #5 (see above) instructs the refuge to “provide opportunities for fish and wildlife-oriented recreation.” Hunting provides that opportunity. In northwestern New Jersey, where the refuge is located, hunting for migratory birds is an historic, traditional, sustainable activity.

A refuge migratory bird hunt program also helps cull certain wildlife populations, such as Canada geese. An overabundance of geese yields intensive browsing which reduces the availability of important food resources for other waterfowl species. Since geese tend to browse on the tender shoots of new plant growth, over-browsing also has direct negative impacts on plant communities and on the re-vegetation of newly planted or bare soils. Over-browsing also causes indirect impacts to refuge fauna. The decrease of species and structural diversity in refuge plant communities yield degraded habitat for a wide range of refuge wildlife. Further, an over-abundance of geese often results in the excessive addition of fecal material into nearby ponds and lakes, reducing water quality and raising the potential for disease transmission to other wildlife species. Last, providing an opportunity to hunt at the refuge promotes the stewardship of our natural resources and increases public appreciation and support for the refuge.

Migratory game bird hunting helps us achieve refuge purposes and management goals and objectives, as outlined in the final CCP.

Availability of Resources

The hunt program at Wallkill River refuge will require the following financial and staff resources:

Biology (planning, monitoring, reporting) (.0625 FTE).....	\$3,000
Law Enforcement (.0625 FTE)	\$3,000
Maintenance (parking areas, signs) (.025 FTE).....	\$1,250
Administration (permits, public relations)	
- Administrator (.10 FTE)	\$3,000
- Refuge Manager (.0125 FTE)	\$1,000
Materials.....	\$1,250
TOTAL.....	\$12,500

The financial and staff resources necessary to provide and administer this use at its current level and at the level described in the final CCP are now available and we expect them to continue in the future subject to the availability of appropriated funds.

Anticipated Impacts of the Use

Waterfowl species known to breed on the refuge include American black duck, wood duck, hooded merganser, common merganser, mallard, and Canada goose. Many additional species, such as scaup, American widgeon, northern pintail, bufflehead, green-winged teal, ring-necked duck, blue-winged teal and snow goose frequent the refuge during migration. The primary waterfowl species taken by hunters are Canada goose, mallard, American black duck, green-winged teal, wood duck, and hooded merganser.

Our migratory bird permit consists of these species and seasons:

Sept. Canada Goose	Sept. 1 – Sept. 30
Rails and Gallinule	Sept. 1 – Nov. 8
Snipe	Sept. 16 – Dec. 30
Regular Waterfowl	Oct. 14 – Nov. 4, 14 – Dec. 30
Winter Canada Goose	Jan. 22 – Feb. 15

There are approximately 75 days open to goose hunting and 60 days open to duck hunting each year. The refuge issues between 100 and 200 permits each year to waterfowl hunters. The allowed take for these species follows New Jersey hunting regulations, which change every year. However, daily bag limits for the 2007-2008 season are as follows: Canada geese, 15 per day for the September season, 3 per day for the regular season, 5 per day for the special winter season; ducks, 6 per day to include no more than 1 pintail, 1 black duck, 2 wood ducks, 2 redheads, 2 canvasbacks, 4 mallards (not more than 2 hens), 2 scaup and 4 scoters. In addition, 5 mergansers (though no more than 2 hooded mergansers) per day may be taken.

Since the refuge has been open to hunting since 1993, and hunting occurred in the Wallkill area for many decades before the creation of the refuge, we expect no additional impacts. Some disturbance of non-target wildlife species and impacts on vegetation may occur. However, those impacts should be minimal, because hunting pressure is moderate and occurs outside the breeding season. Hunting for migratory birds also helps to keep populations of browsing species within the carrying capacity of the habitat, thus reducing excessive damage to vegetation caused by over-browsing, and maintaining understory habitat and groundcover for other species.

The impacts of allowing hunting may include disturbance of non-target species in the course of tracking prey, trampling of vegetation, possible creation of unauthorized trails by hunters, littering and possible vandalism and subsequent erosion. Shotgun noise from hunting could cause some wildlife disturbance as well.

Public Review and Comment

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft Comprehensive Conservation Plan/Environmental Assessment for Wallkill River National Wildlife Refuge.

Determination

_____ Use is not compatible

 X Use is compatible, with the following stipulations

Stipulations Necessary to Ensure Compatibility

A. Migratory Game Birds. This includes the take of ducks, geese, mergansers, rails, gallinules, coots, woodcock, and snipe. The take of all other migratory birds will be prohibited.

We manage migratory birds on a flyway basis, and establish refuge hunting regulations in each state based on flyway data. This ensures that refuge hunts are compatible with the principles of sound wildlife management and otherwise in the public interest (50 C.F.R. § 32.1.). Atlantic Flyway and State of New Jersey regulations apply to the migratory bird hunting program at the refuge. Refuge lands in New York State are not open to hunting. Hunting will reduce the number of birds in the flyway, within allowable limits, as determined by federal and state agencies. Hunting and the associated hunter activity will likely cause the direct disturbance of non-target birds, but only for the short-term. Those temporary impacts are mitigated by the presence of adjacent refuge habitats where hunting does not occur, and where birds can feed and rest undisturbed.

By law, no more than 40 percent of refuge lands purchased with Migratory Bird Conservation Commission (Duck Stamp) funds can be open to migratory bird hunting when that refuge is an “inviolate sanctuary.” This refuge is not considered an inviolate sanctuary, but Service Regional Directors retain the authority to institute this policy on all refuges within their responsibility and Region 5 policy is to do so. An exception might be to open more than 40 percent of the refuge to resident Canada goose hunting.

The use of retrieving and/or pointing dogs for migratory game bird hunting will be permitted; however, the dogs must be under the hunter’s control at all times (605 FW 2.6.G). Groups of three or more dogs in the field per hunting party will be prohibited. Each hunter will be limited to 25 non-toxic shells and must use a dog, a boat, or waders to quickly retrieve downed waterfowl. It is unlawful to hunt migratory game birds from a motor boat that is running (50 C.F.R. § 20.21(e)). Permanent and pit blinds will not be allowed. Temporary blinds and boats must be removed at the end of each hunting day.

We will allow hunting only in designated areas and only in areas that are large enough to provide adequate accessibility and quality hunting opportunities. We will not allow hunting in sensitive habitats or where it would pose a threat to public safety.

Justification

Hunting is a priority public use as defined by The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997. If compatible, hunting is to receive our enhanced consideration over other general public uses in refuge planning and management. It will not cause an undue administrative burden. Annual adjustments can be made in the hunting program to ensure its continued compatibility.

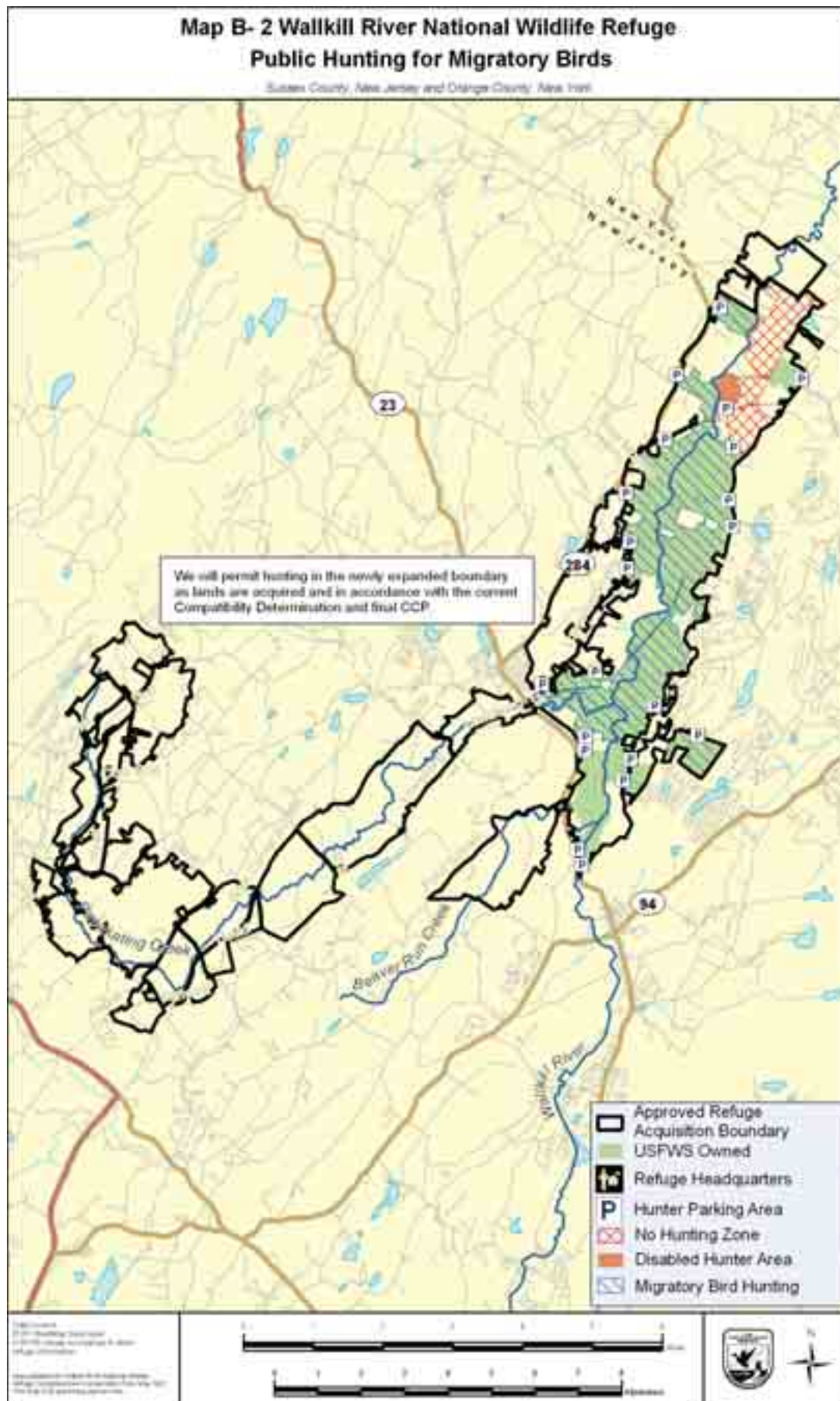
Based on the stipulations above, migratory bird hunting will not materially interfere with or detract from the mission of the Refuge System nor will it diminish the purposes for which the refuge was established. Specifically, the use will promote refuge purposes #1, #2, #4, and #5 by ensuring healthy populations of migratory birds and by preventing habitat destruction from overuse by over-represented species. It also directly promotes priority public uses and supports the Migratory Bird Treaty Act with regard to hunting of migratory birds species.

Project Leader Edmund H. Hays 1/27/09
(Signature) (Date)

Concurrence

Regional Chief Anthony D. Leger 1/29/2009
(Signature) (Date)

Mandatory 15-year re-evaluation date Jan. 29, 2024
(Date)



Compatibility Determination

Use

Public Hunting for Black Bear

Refuge Name

Wallkill River National Wildlife Refuge

Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

Refuge Purpose(s)

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to conserve and enhance populations of fish, wildlife, and plants within the refuge, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

“the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions....” 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986)

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” 16 U.S.C. 742f(a)(4); “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. “16 U.S.C. 742f (b)(1) (Fish and Wildlife Act of 1956)

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

National Wildlife Refuge System Mission

The mission of the National Wildlife 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.”

Description of Use

(a) What is the use? Is it a priority public use? The use is public hunting for black bear. Hunting is 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).

(b) Where will the use be conducted? In general, the refuge will permit black bear hunting throughout the New Jersey portion of the refuge on Service-owned lands, wherever the refuge currently allows deer hunting (see map B-3). As with deer hunting, no bear hunting will be allowed in the northeast section of the refuge, including Liberty Marsh and the area around the Appalachian Trail. The refuge assesses its hunt program on an annual basis to determine which areas of the refuge will be open or closed to hunting. Annual hunt plans and updated maps will show which areas are closed each year.

(c) When will the use be conducted? The refuge will permit bear hunting only when the State of New Jersey is open to bear hunting. Bear hunting will be conducted in accordance with New Jersey State seasons unless safety or overriding resource concerns would make hunting incompatible.

Current Service policy requires that a refuge submit a new hunt package, consistent with 605 FW1 and 605 FW 2.9, if a major change to the hunt program is proposed. A major change is defined for this purpose as a new hunting activity, adding a new species to the program, or opening a new area to hunting. In this case, the major change is adding a new species (bear) to the refuge's hunt program. Therefore, we plan to submit an opening package for bear hunting after the final CCP is approved.

(d) How will the use be conducted? Prospective hunters will apply to the refuge for a permit to hunt bear. The refuge will follow New Jersey State regulations for all other aspects of the hunt (i.e., bag limits, shooting times). Consistent with State/Federal regulations, no baiting or pursuit dogs will be allowed on the refuge.

(e) Why is this use being proposed? Hunting is a priority public use as defined by The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997. If compatible, hunting is to receive our enhanced consideration over other general public uses in refuge planning and management. In addition, refuge purpose #5 (see above) instructs the refuge to "provide opportunities for fish and wildlife-oriented recreation." Hunting provides that opportunity.

Since 1953, the New Jersey Division of Fish and Wildlife (DFW) and the Fish and Game Council (Council) have managed black bear as a game animal. Game animal status protected bears from indiscriminate killing, which stabilized the population. Limited hunting was legal in 10 seasons from 1958-1970 and resulted in a harvest of 46 bears. Based upon data gathered through the regulated hunting seasons the bear population status was assessed and the Council closed the bear-hunting season in 1971 (Lund 1980). Since the 1980s the black bear population has increased and its range has expanded due to the protection afforded them by game animal status (NJDEP 2004).

Total bear population estimates for a 580-square-mile sample area in Northwest New Jersey was 1,490 bears, or 2.56 bears/sq. mi., at the start of the 2003 bear-hunting season. DFW biologists determined the 2005 population for the same 580 sq. mile to be 1,606 bears, or 2.76 bears per square mile.

Black bears in New Jersey have adapted to live near people and human development, taking advantage of human-derived food sources and protected habitats. Increasing human development and the coincident increase of the bear population has resulted in an increase in bear-human conflicts. The expanding human habitat/bear habitat interface provides potential for conflict because individual black bears searching for food are encountering humans throughout their home ranges. Further complicating this issue is recent evidence that the home range of a female black bear in prime New Jersey habitat (which encompasses the Wallkill River refuge) has decreased in size from an average of 6.5 square miles documented in the early 1990s, to the current

average of 2 square miles (NJDEP 2004). Cooperative studies conducted between the New Jersey Division of Fisheries and Wildlife (NJDFW), Rutgers University, and East Stroudsburg University is ongoing. Stomach content analysis of female bears indicates that most bears are obtaining forage from human-derived food sources regardless of whether the individual has been classified as a nuisance bear or not. NJDFW research has demonstrated that older females in the 5-10 year old class are consistently producing litter sizes of 2.7 cubs. Studies have also indicated that bears are beginning to reproduce as early as three years of age. Incidents involving bear damage to property and livestock remain high in frequency and severity. The New Jersey DFW Wildlife Control Unit (WCU) received 1,096 complaint calls in 2001 and 1,412 complaint calls in 2002 and 1,308 complaint calls in 2003. These complaints range from raids on garbage bins and birdfeeders to bears attacking humans, entering homes, killing livestock and pets or destroying beehives and agricultural crops. Damage estimates are in excess of \$100,000 annually (NJDEP 2004). In addition, the immigration of New Jersey bears into neighboring Pennsylvania and New York has affected those states. The Pennsylvania Game Commission has opened extended hunting seasons in the wildlife management units that have the highest bear densities and where conflicts have significantly increased. Two of those management units, which abut northwestern New Jersey, accounted for 17 percent of Pennsylvania's total statewide harvest in 2005 (Penn GC Digest 2006-07.)

The State of New Jersey 1997 Black Bear Management Plan (McConnell et al. 1997) recognized that the cultural carrying capacity had been reached in northern New Jersey and the bear population was large enough to sustain a limited, regulated hunting season. In 2000, the New Jersey Council amended the Game Code to include a three-segment black bear hunting season. The purpose of the hunting season was to reduce the bear population (to 350 bears or 1 bear per 2.5 square miles) in order to reduce the associated bear/human conflicts, including property damage caused by bears.

Availability of Resources

We will open the same number of acres to bear hunting as we do for deer hunting. Opening the refuge to bear hunting will be a minimal additional cost to the refuge above what it costs to manage the deer hunt, turkey and migratory bird hunts. The following costs will be required to administer and manage the bear hunt at Wallkill River refuge.

Biologist Review (2-3 days)	\$700
1-2 days of law enforcement personnel	\$500
Dispensing Information during year	\$200
Hunter brochure (design, printing)	\$100
Permits/regulations/forms	<u>\$1,600</u>
TOTAL.....	\$3,100

The financial and staff resources necessary to provide and administer this use at the level described in the final CCP are now available and we expect them to continue in the future subject to the availability of appropriated funds. The refuge charges \$20 to apply for a permit to help defray the cost of administering hunting on the refuge. The refuge sells an average of 900 permits annually, which means an average revenue stream of about \$15,000, factoring in discounts for senior citizens and under-16 age group. Averages of 700-800 hunters have hunted the refuge over the past three years. Although the refuge will issue separate permits for hunting deer and bear, hunters will not be charged for both.

Anticipated Impacts of the Use

The black bear population is an important component of the diversity of wildlife within the refuge. We rely on the states to conduct surveys and review all relevant literature when making determinations on hunting seasons and allowable take. The State takes into consideration many factors in making these decisions. One of the main factors is population size. Factors influencing population size include reproductive potential and food availability. Bears usually breed every two years. Age at first breeding is usually 4 years, and the average litter size is 2.5 (Hellgren and Vaughan 1989a, Elowe and Dodge 1989, and Eiler et al. 1989). Bunnell and Tait (1981) identified that black bear populations exhibiting these characteristics could withstand an annual mortality rate of approximately 20 percent. Black bears are polygamous; adult male bears tend to have larger home

ranges than females, and they tend to overlap the home ranges of the maximum number of breeding females (Rogers 1987). Thus, a reduction in number of males will not adversely affect the reproductive potential of the population. Black bear reproduction and population growth is also strongly associated with nutritional status. Samson and Huot (1995) found that bears in poor condition, as measured by body weight, did not produce young during that year. Elowe and Dodge (1989) and Eiler et al. (1989) found a strong correlation between size of fall mast crop and reproduction. During years of mast failure females either did not breed or resorbed young. Conversely, bears with sufficient food availability and high nutritional status would be expected to have a higher reproductive potential.

Another factor that influences black bear population size is social interactions—territoriality and dispersal of sub-adults. There is conflicting information as to whether or not black bears are territorial (Bunnell and Tait 1981). Elowe and Dodge (1989) found no evidence of territoriality by black bears. However, a number of researchers have found home ranges of black bears to have very little overlap, which would suggest territorial behavior. Young and Ruff (1982) and Rogers (1987) found females to be territorial but not males. Adult bears, especially males, tend to regulate population density by either preying upon younger bears or forcing them to disperse (Bunnell and Tait 1981, Young and Ruff 1982, Lecount 1982).

Hunting technique influences the sex ratio of bear harvest; a greater number of males are taken when bait or hounds are used (Litvaitis and Kane, 1994), but we do not allow bait or hounds when hunting bear on the refuge. The larger home ranges of adult males make them more vulnerable to hunting. Dispersing sub-adult males are generally much more vulnerable to different mortality factors than are resident adults. Hunting season dates can also be used to influence harvest sex ratios because pregnant females den earlier in the fall than males or non-pregnant females (Hellgren and Vaughan 1989b, Schooley et al. 1994). Bear managers therefore have established harvest regulations that often protect females and allow for greater harvest of males.

In 2003, New Jersey held its first black bear hunt in more than 30 years. Seven thousand hunting permits were issued, and 328 bear were harvested during a one-week season. In 2005, the state held a second bear hunt during which 280 bears were harvested, with about 4,000 permits issued. Based on such a success rate (4.7 percent and 7 percent), the refuge, which anticipates issuing about 100 permits, would yield a harvest of 4 to 7 bears. The refuge offers good, but not prime, bear habitat, so it is possible these numbers are slightly higher than the numbers that would actually be taken. In addition, much of the refuge is difficult to access, and the challenge of animal removal could reduce interest, areas hunted and success rates.

At most, the refuge could provide habitat for about 20 to 22 bears (8 square miles with 2.6 bears per square mile). The state aims for a 20 percent reduction in the State's total bear population with a hunt. With the state estimating a bear population of 900 individuals, we expect the refuge hunt and projected success rate will have no major impact on the local, regional, or State population. Furthermore, high bear mobility will mean that any greater number of bears taken on the refuge will likely be replaced by bears from outside the refuge. With typical bear reproduction rates (2-3 cubs per litter In New Jersey), we do not expect this level of hunting to significantly affect the long-term populations either. The result will be a stable population of bears on the refuge. With, at minimum, stable population replacement rates in the surrounding areas, we do not expect impacts on a larger scale either.

We believe that a controlled bear hunt is an important management tool that will help maintain the biological and cultural carrying capacity of the black bear population in and around the Wallkill River refuge. Analysis of the results of the 2003 NJDFW controlled hunt shows that the harvest goals were met and that results can be accurately predicted by the NJDFW. We therefore find that a public bear hunt conducted according to state seasons and bag limits will be compatible with the principles of sound wildlife management and otherwise in the public interest (50 C.F.R. § 32.1.).

Public Review and Comment

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft CCP/EA for Wallkill River National Wildlife Refuge.

Determination

_____ Use is not compatible

 X Use is compatible, with the following stipulations

Stipulations Necessary to Ensure Compatibility

The following stipulations are required to ensure compatibility:

- Baiting is prohibited.
- Pursuit hounds are prohibited.

The refuge's hunt program will be managed in accordance with New Jersey State and Federal regulations.

- Each hunter will be issued the list of refuge regulations.
- The hunt program will be reviewed annually to ensure the impacts on the population are sustainable.
- Refuge hunt areas will be buffered to protect neighbors and visitors.
- News releases will be issued, the website updated, and signs posted to inform the public about the bear hunt before and during the event.
- Hunters must possess and carry all required valid State licenses, State and refuge permits.
- Hunters may use only shotguns, 20-gauge or larger, loaded with slugs only. Buckshot may not be used.
- Hunters must wear 400 square inches (2600 square centimeters) of solid-colored, hunter orange clothing or material in a visible manner.
- Hunters may not possess loaded firearms within 50ft (15m) of a refuge road, including roads closed to vehicles.
- Hunters may not shoot onto or across refuge roads, including roads closed to vehicles.

Justification

Hunting is a priority public use as defined by The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997. If compatible, hunting is to receive our enhanced consideration over other general public uses in refuge planning and management. It will not cause an undue administrative burden. Annual adjustments can be made in the hunting program to ensure its continued compatibility.

Based on population surveys conducted by the state, we determine that the bear population to be harvested is surplus to a balanced conservation program. If conducted according to the stipulations above, bear hunting on the refuge will not materially interfere with or detract from the mission of the Refuge System nor will it diminish the purposes for which the refuge was established. Specifically, the use will promote refuge purposes #1 and #2 by helping to maintain a healthy bear population and therefore conserving and enhancing this species. The use will also promote purpose #5 by providing an opportunity for fish and wildlife-oriented recreation. When implemented in concert with the stipulations above the use will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established.

Project Leader Edward H. Hays 1/27/09
(Signature) (Date)

Concurrence

Regional Chief Anthony D. Legge 1/29/2009
(Signature) (Date)

Mandatory 15-year re-evaluation date Jan. 29, 2024
(Date)

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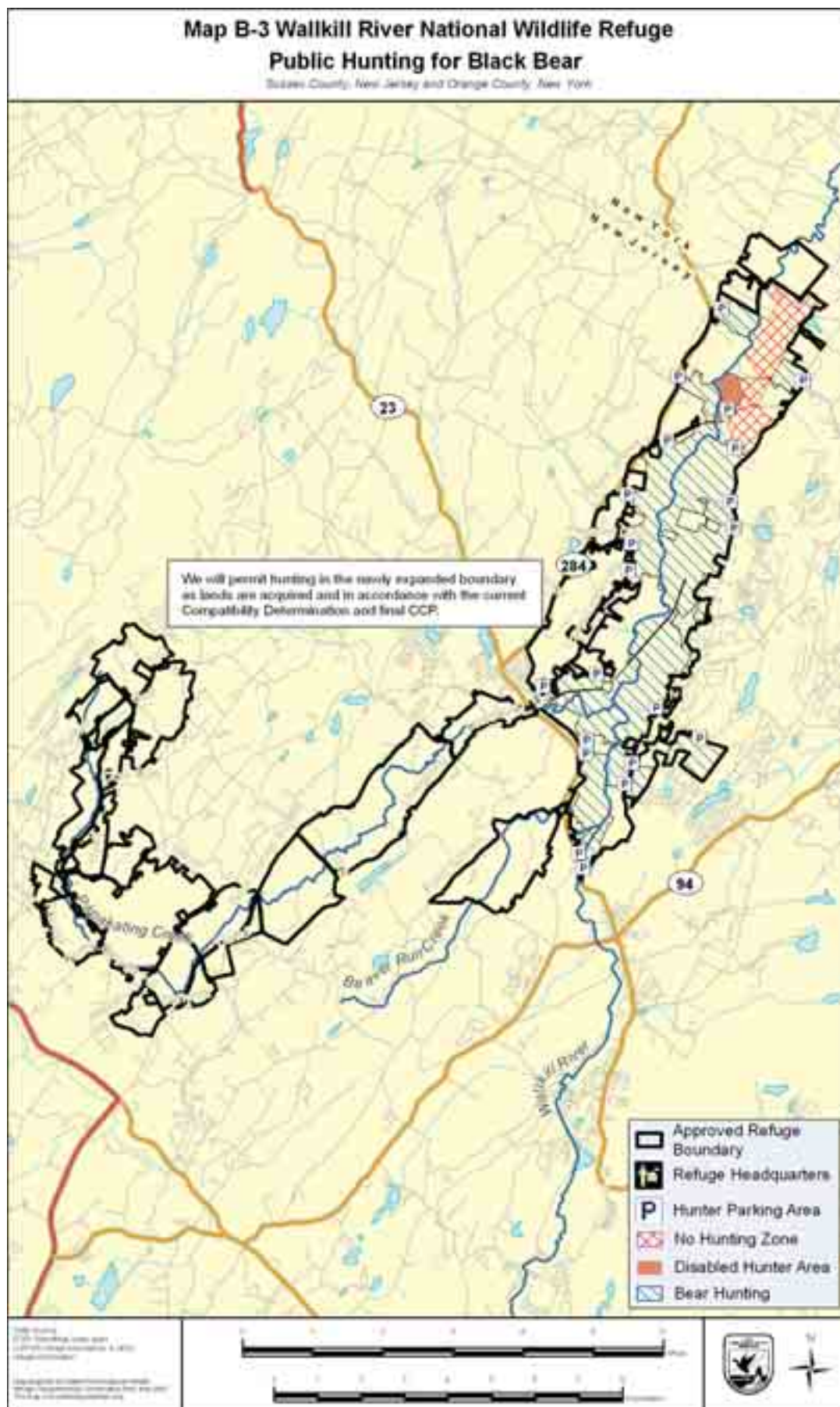
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Compatibility Determination

Use

Public Fishing

Refuge Name

Wallkill River National Wildlife Refuge

Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

Refuge Purpose(s)

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to conserve and enhance populations of fish, wildlife, and plants within the refuge, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

“the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions....” 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986)

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” 16 U.S.C. 742f(a)(4) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. 16 U.S.C. 742f (b)(1) (Fish and Wildlife Act of 1956)

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

National Wildlife Refuge System Mission

The mission of the National Wildlife 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.”

Description of Proposed Use

(a) What is the use? Is it a priority public use? The use is Public Fishing. Fishing is 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).

Supporting Uses: Boating (motorized and non-motorized)

(b) Where will the use be conducted? The refuge will permit fishing on the Wallkill River and the Papakating Creek. The refuge will also permit fishing at Stanley's Pond, located behind (west) of the refuge headquarters at 285 Lake Wallkill Road. There are fishing access points at the Wood Duck Nature Trail, Dagmar Dale Nature Trail, Bassett's Bridge, Oil City Road and on Route 565. Additional access points will be established at County Route 565 and along Lake Wallkill Road (see map B-4).

(c) When will the use be conducted? The use will be conducted during the hours and in the seasons specified in the fishing regulations of the states of New Jersey and New York.

(d) How will the use be conducted? Public fishing will be conducted according to New York or New Jersey state regulations, depending on where the use is occurring. Fishing will be permitted by rod and reel or hook and line, and bow, per state regulations. Public fishing on the refuge is provided at designated fishing access points. Where there is a public boat launch, anglers can launch a watercraft and fish from a boat. Non-motorized boats and motorized boats can be used, but the refuge's launch access sites do not provide trailer access for boats. Anglers are not required to obtain a refuge permit, but are required to obtain a state fishing license. Unauthorized introductions of both non-native and native fish can disrupt aquatic ecosystems and destroy natural fisheries. No fish of any species may be introduced onto the refuge without appropriate state and refuge permits, including baitfish and eggs.

(e) Why is this use being proposed? The use is being proposed by the refuge to promote one of the priority public uses of the Refuge System. Providing opportunities for visitors to fish will promote stewardship of our natural resources and increase public appreciation and support for the refuge. In addition, refuge purpose #5 (see above) instructs the refuge to "provide opportunities for fish and wildlife-oriented recreation." Fishing provides that opportunity.

Availability of Resources

Staff time: 10 hours of LE staff = \$225

Fishing Day event: 160 hours of staff time at \$22 per hour = \$3,520

The financial and staff resources necessary to provide and administer this use at its current level and at the level described in the final CCP are now available and we expect them to continue in the future subject to the availability of appropriated funds.

Anticipated Impacts of the Use

Fishing potentially could cause disturbance to wildlife that use the ponds, the river, etc, including waterfowl and shorebirds. Discarded fishing line and other fishing litter could potentially entangle migratory birds or mammals and cause injury and death (Gregory 1991). In addition, litter can affect the visual experience of refuge visitors (Marion and Lime 1986). Law enforcement issues related to fishing include illegal taking of fish, littering, trespassing and fires. However, these impacts have generally not been observed on the refuge.

Public Review and Comment

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft CCP/EA for Wallkill River National Wildlife Refuge.

Determination

_____ Use is not compatible

 X Use is compatible, with the following stipulations

Stipulations Necessary to Ensure Compatibility

In order to minimize disturbance to refuge wildlife and their habitats, the refuge will not allow fishing in areas where the activity would contribute to unacceptable levels of erosion, or would in any other way result in detrimental impacts to fish, wildlife and their habitats.

Anglers must comply with all state and refuge regulations, such as obtaining a valid state fishing license. These regulations ensure healthy fish populations. Discarded and used fishing line and related materials must be removed from the refuge. Taking reptiles and amphibians from the refuge is strictly prohibited, as is bait trapping, stocking and fishing competitions. Lead sinkers are also prohibited in order to prevent lead poisoning to waterfowl and wading birds. A law enforcement presence will be required to prevent illegal taking of fish, littering, trespassing and fires.

Justification

The National Wildlife Refuge System Improvement Act of 1997 identifies fishing as a priority public use. Priority public uses are to receive enhanced consideration when developing goals and objectives for refuges if they are determined to be compatible. Based on the implementation of the stipulations above, this use can be conducted without inhibiting the Service's ability to sustain and enhance habitats for grassland-dependent migratory birds, wintering raptors or bog turtles on the refuge. Further, providing fishing opportunities will promote public appreciation and support for the refuge. Public fishing will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established. Specifically, fishing will enhance the refuge's ability to accomplish refuge purposes #1, #2, #3 and #5 by enhancing an awareness and appreciation for fish, fish habitat, and water quality. The use will not materially impact refuge purpose #4. We therefore find that public fishing conducted according to state seasons and limits will be compatible with the principles of sound wildlife management and otherwise in the public interest (50 C.F.R. § 32.1.).

Project Leader Edward D. Henry 1/27/09
(Signature) (Date)

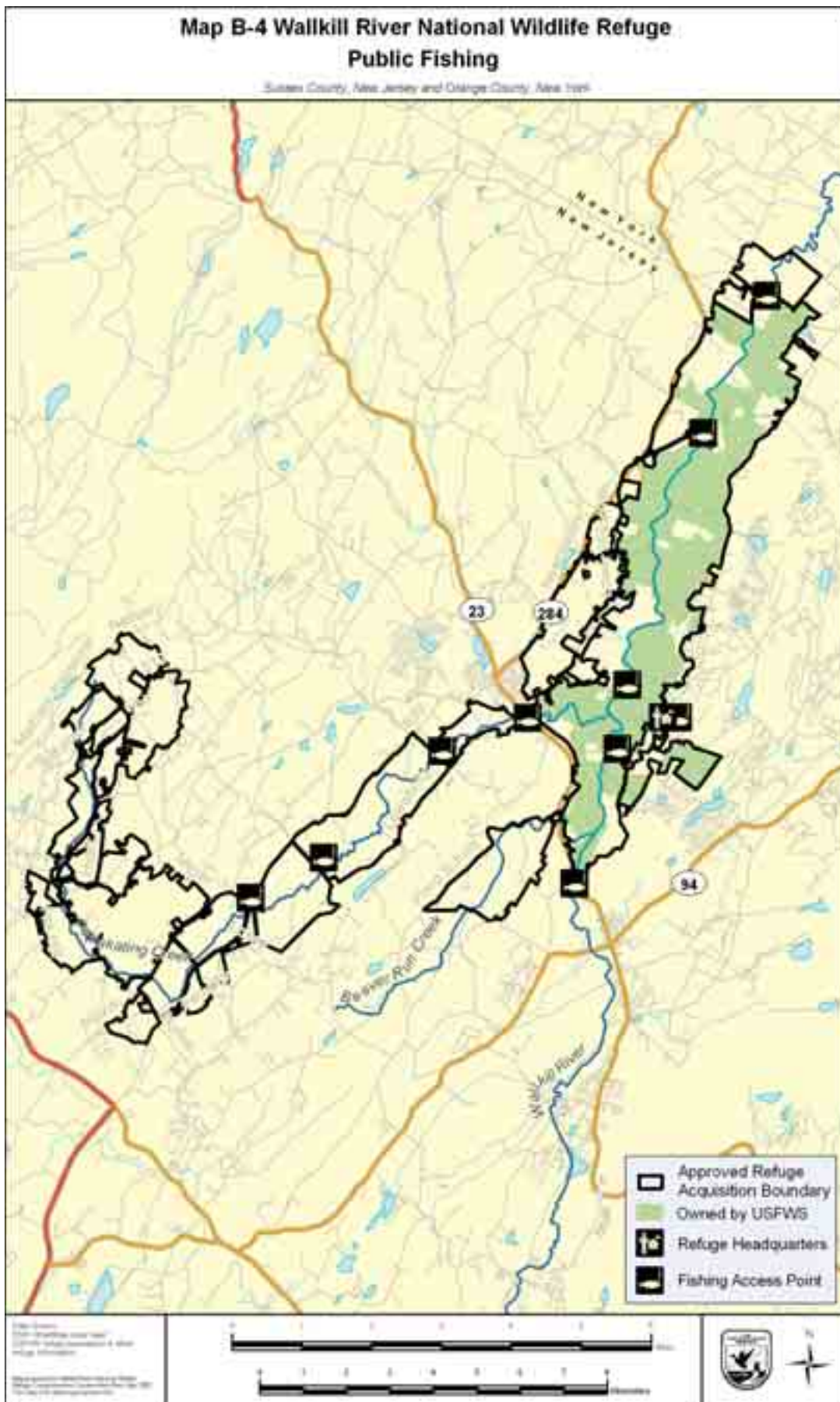
Concurrence

Regional Chief Anthony D. Legier 1/29/2009
(Signature) (Date)

Mandatory 15-year re-evaluation date Jan. 29, 2024
(Date)

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Compatibility Determination

Use

Wildlife Observation & Photography and Environmental Education & Interpretation

Refuge Name

Wallkill River National Wildlife Refuge

Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands in the expansion area under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

Refuge Purposes

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to conserve and enhance populations of fish, wildlife, and plants within the refuge, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

“the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions...” 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986)

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” 16 U.S.C. 742f(a)(4); “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. “16 U.S.C. 742f (b)(1) (Fish and Wildlife Act of 1956)

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

National Wildlife Refuge System Mission

The mission of the National Wildlife 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.”

Description of Use

(a) What is the use? Is it a priority public use? *Primary Use:* The uses are wildlife observation and photography, environmental education and interpretation. These uses are priority uses 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).

Supporting Uses: Boating (motorized and non-motorized), cross-country skiing, and snowshoeing.

(b) Where will these uses be conducted? These uses will be allowed in all Service-owned areas open to the public, including but not limited to the Wallkill River (by boat), kiosks and displays, nature trails (Dagmar Dale, Wood Duck, and Liberty Loop nature trails), river access areas (Oil City Road, Bassett's Bridge, Route 565, southern edge of the refuge), and any additional lands opened to the public through this CCP or other appropriate regulatory documents (see map B-5).

(c) When will the uses be conducted? The uses will be conducted year-round during the hours when the refuge is open to the public, which is one hour before official sunrise to one hour after official sunset.

(d) How will the uses be conducted? Currently the refuge is open to the public for wildlife observation, photography, environmental education and interpretation. The refuge has facilities for environmental education at its headquarters area. An environmental education program will utilize partnership efforts with organizations such as New Jersey Audubon Society and the Wallkill Watershed Management Group. The refuge will focus on "Teach the Teacher" programs. On a limited basis, the refuge offers interpretive programs.

Wildlife observation and photography occur on individual or group bases on refuge lands open to the public. We allow cross-country skiing and snowshoeing to facilitate these uses. No jogging, horseback riding, bicycling, or motorized vehicles are allowed.

The final CCP for Wallkill River National Wildlife Refuge expands or enhances these four public uses using a variety of strategies including, but not limited to

A. Wildlife Observation and Photography

Increase access to refuge lands by

- opening additional refuge lands to the public, including instituting a special-use permit system (fee) for off-trail access to all Service-owned lands (unless specified in the special use permit or on signs) on Sundays from September through March;
- working with abutting landowners to gain access to private lands adjacent to the refuge;
- extending existing refuge trails;
- creating new refuge trails;
- constructing additional boardwalks, barrier-free canoe/kayak access points, and photography blinds.

B. Interpretation

- Enhance and expand opportunities for environmental interpretation by:
- Increasing involvement with local youth groups'

- Developing new interpretive materials, including animal and plant checklists, trail guides, self-guided trail pamphlets, roadside/parking lot displays;
- Hiring a Visitor Services Professional;
- Sponsoring a speaker series at the refuge for the public to learn about wildlife and nature;
- Developing a Wallkill River canoe trail, install signs, and prepare trail brochure;
- Conducting guided walks on refuge trails and former Lehigh and New England railroad bed south of Kelly Road.

C. Environmental Education

- Enhance and expand opportunities for environmental education by:
- Expanding partnerships with organizations such as New Jersey Audubon Society and New Jersey Fish and Wildlife to offer joint environmental education programs for students and teachers;
- Expanding the refuge internship program;
- Providing at least one “Teach the Teacher” workshop each year;
- If complete funding for Owens Station is secured, using that facility as a fully functioning environmental education facility and developing curriculum-based programs;

Implementation of the above strategies will depend on the refuge’s staff and funding levels.

(e) Why is this use being proposed? The Refuge System Improvement Act defines wildlife observation and photography, and environmental education and interpretation as priority public uses that, if compatible, are to receive our enhanced consideration over other general public uses. Authorizing these uses will produce better-informed public advocates for Service programs.

In addition, refuge purpose #5 (see above) instructs the refuge to “provide opportunities for fish and wildlife-oriented recreation.” These uses will provide opportunities for visitors to observe and learn about wildlife and wild lands at their own pace in an unstructured environment, and observe wildlife in their natural habitats firsthand. They will provide visitors with compatible educational and recreational opportunities to enjoy refuge resources and gain better understanding and appreciation of fish and wildlife, wild lands ecology, the relationships of plant and animal populations in an ecosystem, and wildlife management. They will enhance public understanding of natural resource management programs and ecological concepts, enable the public to better understand the problems facing our wildlife and wild lands resources, help them realize what effect the public has on wildlife resources, learn about the Service role in conservation, and better understand the biological facts upon which we base Service management programs.

Professional and amateur photographers alike will gain opportunities to photograph wildlife in its natural habitat. Those opportunities will increase the publicity and advocacy of Service programs. These uses will provide wholesome, safe, outdoor recreation in a scenic setting, and entice those who come strictly for recreational enjoyment to participate in the educational facets of our public use program and become advocates for the refuge and the Service.

Availability of Resources

Environmental education and interpretation and wildlife observation and photography occur through the use of existing staff, resources, and facilities. Existing resources for environmental education and interpretation

include staff, interpretive kiosks and displays, environmental education programs carried out through extensive help of volunteers, displays, and trails. Existing resources for wildlife observation and photography include trails, an observation blind, and an observation platform.

Cost Breakdown

The following list estimates the required costs for the refuge to administer and manage its programs for wildlife observation and photography, environmental education and interpretation. They do not include the costs of new construction, kiosks, and signs. Appendix E presents those costs in a Refuge Operating and Needs data list.

Routine maintenance:	\$17,000 annually; that is the expected cost to maintain the refuge public use facilities including parking areas and restroom maintenance and garbage removal.
Supplies and materials:	\$11,000; that includes interpretative and refuge brochures, wood chips to cover trails, and the maintenance of erosion control structures.
Monitoring:	\$3,500 annually, to be carried out in cooperation with state and local partners.
Law Enforcement:	\$6,000 annually, for a refuge officer.
Administration	\$2,000 annually to offer and process permits.
Total:	\$39,500

The financial and staff resources necessary to provide and administer this use at its current level are now available and we expect them to continue in the future subject to the availability of appropriated funds. As stated in the final CCP, we would need additional resources in order to administer this use at the level described in the final CCP.

Anticipated Impacts of the Use

On-site activities by teachers and students using trails and environmental education sites may impose low-level impacts such as trampling of vegetation, removing vegetation, littering and temporary disturbance to wildlife. In the event of persistent disturbance to habitat or wildlife, the activity will be restricted or discontinued.

Placement of kiosks may affect small areas of vegetation. Kiosks will be placed where minimal disturbance will occur.

Providing additional interpretive and educational brochures as well as increasing involvement with local groups in the area may result in increased knowledge of the refuge and its resources. This awareness and knowledge may improve the willingness of the public to support refuge programs, resources, and compliance with regulations.

We predict that the impacts of wildlife observation and photography uses will be minimal. Possible impacts include disturbing wildlife, removing or trampling of plants, littering, vandalism and entrance into closed areas. There will be some removal of vegetation to place the observation platforms and photography blinds. In the event of persistent disturbance to habitat or wildlife, the activity will be restricted or discontinued. Little energy will be expended by wildlife leaving areas of disturbance.

With the final CCP, we will expand wildlife observation and photography opportunities by opening all Service-owned lands at the refuge to the public, with the exception of the impoundments and any areas noted on the special use permit and by refuge signs. The additional use will occur on Sundays from September to March. Since this use will occur only during the late fall, winter and early spring months, we expect impacts to be minimal because most of the refuge's wildlife are not present or are hibernating at this time of year

and many wildlife habitats are dormant. To reduce any impacts and ensure visitor safety, the area inside the impoundments will remain closed. Open access on Sunday will end by March 31 of each year, which will minimize disturbance to nesting birds. Currently, the refuge issues about 700 hunt permits each year, with each hunter visiting about 15 times. We anticipate issuing no more than 500 permits for wildlife observation and photography Sundays, which means no more than 500 people could visit the refuge on any given Sunday, although typical visitation will be much less. Current refuge visitation on Sundays, which does not require a fee or a permit, is 200 visitors or less. Also, the visitation will be spread around the 4,500 acres of refuge open to the public with each visit not lasting much more than 2 hours, based on typical fall—winter—early spring use. We anticipate most people visiting on a Sunday will spend 90 percent of their time on the old railroad bed that runs for 9 miles through the refuge or on the old roads and trails that run through the refuge. If Sunday visitation were shown to have unacceptable impacts, the number of special use permits offered will be cut back or eliminated.

Skiing and snowshoeing have the potential to impact shorebird, waterfowl, and other migratory bird populations feeding and resting near the trails during certain times of the year.

Human disturbance to migratory birds has been documented in many studies in different locations. Conflicts arise when migratory birds and humans are present in the same areas (Boyle and Samson 1985). The responses of wildlife to human activities include departure from the site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al 1985, Henson and Grant 1991, Kahl 1991, Klein 1993), the use of sub-optimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993), and an increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). McNeil et al. (1992) found that many waterfowl species avoid disturbance by feeding at night instead of during the day. Studying the effects of human visitation on water birds at the J.N. “Ding” Darling refuge, Klein (1989) found resident water birds to be less sensitive to disturbance than migrants were; she also found that sensitivity varied according to species and individuals within species. Ardeids were quite tolerant of people but were disturbed as they took terrestrial prey; great blue herons, tricolored herons, great egrets, and little blue herons were observed to be disturbed to the point of flight more than other birds. Kushlan (1978) found that the need of these birds to move frequently while feeding might disrupt interspecific and intraspecific relationships.

In addition, Batten (1977) and Burger (1981) found that wading birds were extremely sensitive to disturbance in the northeastern United States. Klein (1993) in studying water bird response to human disturbance found that, as the intensity of disturbance increased, avoidance response by the birds increased, and found that out-of-vehicle activity was more disruptive than vehicular traffic; Freddy et al. (1986) and Vaske (1983) also found the latter to be true. In regards to waterfowl, Klein (1989) found migratory dabbling ducks to be the most sensitive to disturbance and migrant ducks to be more sensitive when they first arrived, in the late fall, than later in winter. She also found that gulls and sandpipers to be apparently insensitive to human disturbance, with Burger (1981) finding the same to be true for various gull species.

For songbirds, Gutzwiller et al. (1994) found that singing behavior of some species was altered by low levels of human intrusion. Some studies have found that some bird species habituate to repeated intrusion; frequently disturbed individuals of some species have been found to vocalize more aggressively, have higher body masses, or tend to remain in place longer (Cairns and McLaren 1980). Disturbance may affect the reproductive fitness of males by hampering territory defense, male attraction and other reproductive functions of song (Arrese 1987). Disturbance, which leads to reduced singing activity, would make males rely more heavily on physical deterrents in defending territories, which are time- and energy-consuming (Ewald and Carpenter 1978).

Travel routes can disturb wildlife outside the immediate trail corridor (Miller et al. 2001). Miller et al. (1998) found bird abundance and nesting activities (including nest success) increased as distance from a recreational trail increased in both grassland and forested habitats. Bird communities in this study apparently were affected by the presence of recreational trails, where “generalists” (e.g., American robins) were found near trails and “specialist” species (e.g., grasshopper sparrows) were found farther from trails. Nest predation also was found to be greater near trails (Miller et. al 1998).

Disturbance can cause shifts in habitat use, abandonment of habitat and increase energy demands on affected wildlife (Knight and Cole, 1991). Flight in response to disturbance can lower nesting productivity and cause disease and death. Hammitt and Cole (1998) conclude that the frequent presence of humans in “wild land” areas can dramatically change the normal behavior of wildlife mostly through “unintentional harassment.”

Seasonal sensitivities can compound the effect of disturbance on wildlife. Examples include regularly flushing birds during nesting or causing mammals to flee during winter months, thereby consuming large amounts of stored fat reserves. Hammitt and Cole (1998) note that females with young (such as white-tailed deer) are more likely to flee from a disturbance than those without young.

The Delaware Natural Heritage Program, Division of Fish & Wildlife and the Department of Natural Resources and Environmental Control prepared a document on the “The Effects of Recreation on Birds: A Literature Review” which was completed in April of 1999. We refer to the following information from that document.

Several studies have examined the effects of recreationists on birds using shallow-water habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States (Burger 1981; Burger 1986; Klein 1993; Burger et al. 1995; Klein et al. 1995; Rodgers & Smith 1995, 1997; Burger & Gochfeld 1998). Overall, the existing research clearly demonstrates that disturbance from recreation activities always have at least temporary effects on the behavior and movement of birds within a habitat or localized area (Burger 1981, 1986; Klein 1993; Burger et al. 1995; Klein et al. 1995; Rodgers & Smith 1997; Burger & Gochfeld 1998). The findings that were reported in these studies are summarized as follows in terms of visitor activity and avian response to disturbance.

- Presence: Birds avoided places where people were present and when visitor activity was high (Burger 1981; Klein et al. 1995; Burger & Gochfeld 1998).
- Distance: Disturbance increased with decreased distance between visitors and birds (Burger 1986), though exact measurements were not reported.
- Approach Angle: Visitors directly approaching birds on foot caused more disturbance than driving by in vehicles, stopping vehicles near the birds, or stopping vehicles and getting out without approaching them (Klein 1993). Direct approaches may also cause greater disturbance than tangential approaches to birds (Burger & Gochfeld 1981; Burger et al. 1995; Knight & Cole 1995a; Rodgers & Smith 1995, 1997).
- Type and Speed of Activity: Joggers and landscapers caused birds to flush more than anglers, clammers, sunbathers, and some pedestrians, possibly because the former groups move quickly (joggers) or create more noise (landscapers). The latter groups tend to move more slowly or stay in one place for longer periods, and thus birds likely perceive these activities as less threatening (Burger 1981, 1986; Burger et al. 1995; Knight and Cole 1995a). Alternatively, birds may tolerate passing by with unabated speed whereas if the activity stops or slows birds may flush (Burger et al. 1995).
- Noise: Noise caused by visitors resulted in increased levels of disturbance (Burger 1986; Klein 1993; Burger & Gochfeld 1998), though noise was not correlated with visitor group size (Burger & Gochfeld 1998).

Public Review and Comment

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft CCP/EA for Wallkill River National Wildlife Refuge.

Determination

☐ Use is not compatible

☒ Use is compatible, with the following stipulations

Stipulations Necessary to Ensure Compatibility

Activities will be held in areas where minimal impact will occur. The periodic evaluation of sites and programs will be conducted 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. Refuge regulations will be posted and enforced. Closed areas will be established, posted and enforced. The known presence of a threatened or endangered species will preclude the use of an area until the Refuge Manager determines otherwise.

Special use permits will be issued to Sunday off-trail users and organizations conducting environmental education or interpretive and/or wildlife observation and photography tours or activities on the refuge. A fee may be charged for the special use permit. The areas used by permit will be closely monitored to evaluate the impacts on the resource. If adverse impacts appear, the activity will be moved to secondary locations, curtailed, or discontinued. Specific conditions may apply, depending on the activity requested, and will be addressed through the special use permit.

Guidelines to ensure the safety of all participants will be issued in writing to the permit holder for the activities and will be reviewed before the activity begins.

Commercial photography is subject to a special use permit and commercial photographers will be charged a fee. The fee is dependent on size, scope and impact of the proposed activity. Additional regulations will apply to commercial photography (see 50 C.F.R. 27.71, 27.73)

All photographers must follow refuge regulations. Photographers in closed areas must follow the conditions outlined in the special use permit, which normally include notification of refuge personnel each time any activities occur in closed areas. Use of a closed area should be restricted to inside blinds to reduce disturbance to wildlife. No baits or scents may be used. At the end of each session, the blind must be removed. The refuge may limit group size, based on the season and location. All litter will be removed daily.

Law enforcement patrol of public use areas should continue to minimize the above-mentioned types of violations.

Cross-country skiing and snow shoeing trails must be monitored to make sure that conditions do not pose adverse effects to wildlife populations and their habitats, especially threatened or endangered species. If such species are found utilizing habitat near trails, the trails will be closed or rerouted to ensure habitat protection.

Potential conflicts with other public uses such as hunting, interpretation, etc. will be minimized by using trailhead signs and other media to inform the visitors about current public use activities.

Justification

Environmental education and interpretation activities generally support refuge purposes and impacts can largely be minimized (Goff et al., 1988). The minor resource impacts attributed to these activities are generally outweighed by the benefits gained by educating present and future generations about refuge resources. Environmental education is a public use management tool used to develop a resource protection ethic within society. While it targets school age children, it is not limited to this group. This tool allows us to educate refuge visitors about endangered and threatened species management, wildlife management and ecological principles and communities. A secondary benefit of environmental education is that it instills an 'ownership' or 'stewardship' ethic in visitors and most likely reduces vandalism, littering and poaching; it also strengthens Service visibility in the local community. Environmental education (outdoor classroom) is listed in the Refuge Manual (U.S. Fish and Wildlife Service, 1985) as the highest priority visitor use throughout the National Wildlife Refuge System.

The majority of visitors to the refuge are there to view the wildlife and upland, wetland, and grassland habitat areas. Some visit to develop an understanding of natural or cultural history. This visitation is in accordance with a wildlife-oriented activity and is an acceptable secondary use. There will be some visitor impacts

from this activity, such as trampling vegetation (Kuss and Hall, 1991) and disturbance to wildlife near trails (Klein, 1989 and Burger, 1981), but the knowledge, appreciation and understanding of management gained by visitors will provide support for the Service. The long-term benefits gained through wildlife observation and photography activities outweigh the impacts listed above.

Environmental education and interpretation and wildlife observation and photography will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established.

Based on the stipulations above, the benefits of these priority public uses will support all of the Refuge's purpose's to varying degrees. In particular, these uses will directly promote refuge purpose #5 as they provide opportunities for environmental education and other fish- and wildlife-oriented recreation.

Project Leader Edna O'Hara 1/27/09
(Signature) (Date)

Concurrence

Regional Chief Anthony J. Leger 1/29/2009
(Signature) (Date)

Mandatory 15-year re-evaluation date

Jan. 29, 2024
(Date)

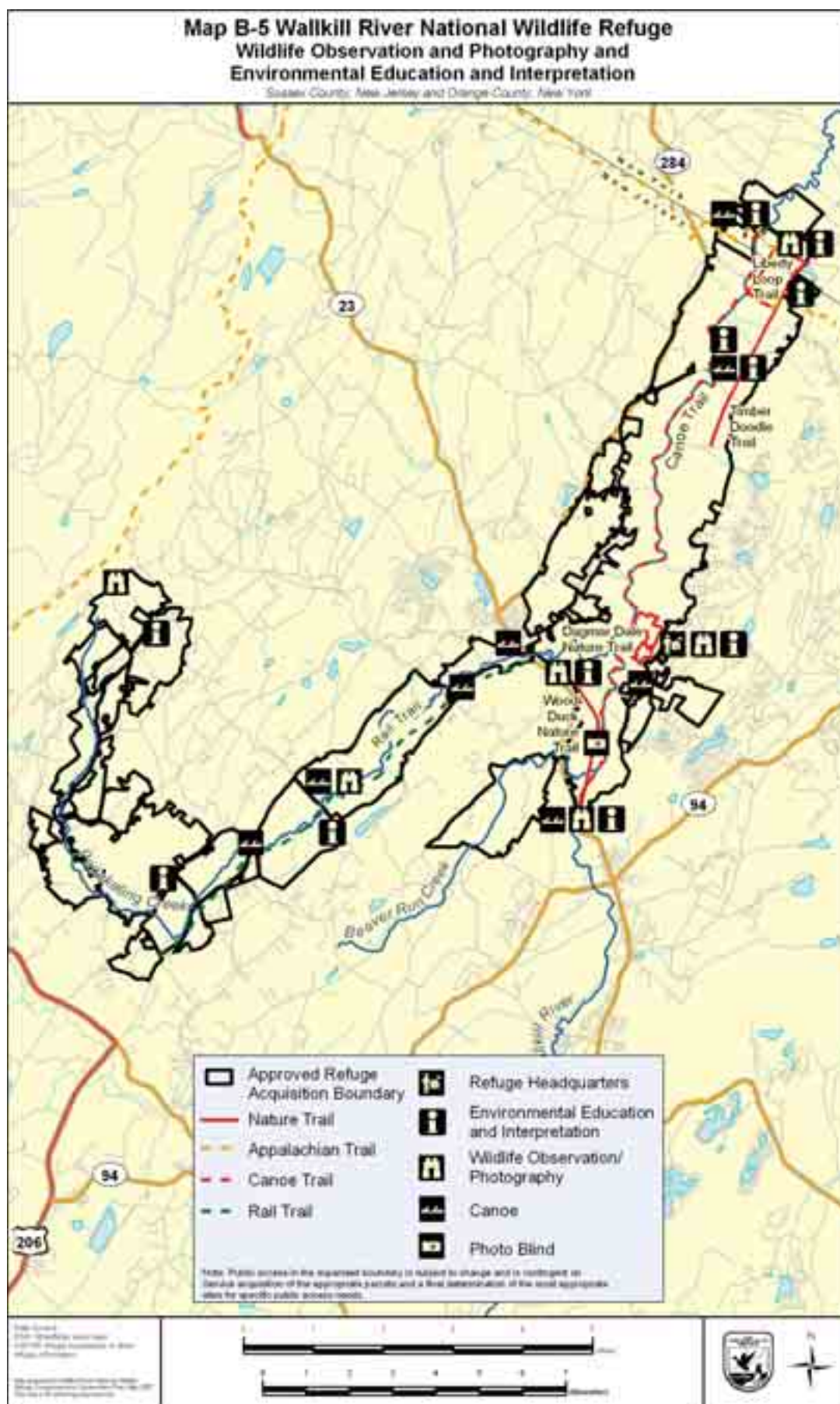
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Compatibility Determination

Use

Cross-Country Skiing and Snowshoeing to Promote Priority Public Uses

Refuge Name

Wallkill River National Wildlife Refuge

Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes lands also could be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

Refuge Purposes

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to conserve and enhance populations of fish, wildlife, and plants within the refuge, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

“the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions....” 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986)

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” 16 U.S.C. § 742f(a)(4) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services.” 16 U.S.C. 742f (b)(1) (Fish and Wildlife Act of 1956)

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

National Wildlife Refuge System Mission

The mission of the National Wildlife 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.”

Description of Use

(a) What is the use? Is it a priority public use?

The uses are cross-country skiing and snowshoeing. These are not priority public uses within the National Wildlife Refuge System.

(b) Where will the uses be conducted?

The uses will be conducted on the Wood Duck Nature Trail (as extended by this CCP), Liberty Loop Nature Trail (as extended by this CCP) and Dagmar Dale Nature Trail.

(c) When will the uses be conducted?

The uses will be allowed when adequate snow is present in the fall, winter and spring.

Uses may be restricted during the late fall and winter when the refuge has wildlife-dependent recreational activities, like deer hunting, in progress. This will help eliminate user conflicts and ensure visitor safety.

(d) How will the uses be conducted?

The uses are self-regulating with signs indicating appropriate routes of travel. The trails are not groomed, so skiers will be required to cut their own trail when there is new fallen snow.

(e) Why is this use being proposed?

While skiing and snowshoeing may not be priority public uses, these activities expose participants to the refuge and the Refuge System. Often cross-country skiers on the refuge engage in some of the priority public uses such as wildlife observation and photography. This exposure may lead to a better understanding of the importance of the Refuge System to the American people. The aforementioned activities have occurred on the refuge for a number of years. The activities are managed in accordance with the Public Use Management Plan dated 2/20/90, and are currently covered by a compatibility determination signed 8/12/94, which found the activities to be compatible with the Refuge's mission.

Availability of Resources

Cross-country skiing and/or snowshoeing do not require any additional staffing or funding resources.

Anticipated Impacts of Use

Cross-country skiing and snowshoeing have the potential to impact shorebird, waterfowl, and other migratory bird populations feeding and resting near the trails during certain times of the year.

Human disturbance to migratory birds has been documented in many studies in different locations. Conflicts arise when migratory birds and humans are present in the same areas (Boyle and Samson 1985). The responses of wildlife to human activities include departure from the site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al 1985, Henson and Grant 1991, Kahl 1991, Klein 1993), the use of sub-optimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993), and an increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). McNeal et al. (1992) found that many waterfowl species avoid disturbance by feeding at night instead of during the day. Studying the effects of human visitation on water birds at the J.N. "Ding" Darling refuge, Klein (1989) found resident water birds to be less sensitive to disturbance than migrants were; she also found that sensitivity varied according to species and individuals within species. Ardeids were quite tolerant of people but were disturbed as they took terrestrial prey; great blue herons, tricolored herons, great egrets, and little blue herons were observed to be disturbed to the point of flight more than other birds. Kushlan (1978) found that the need of these birds to move frequently while feeding might disrupt interspecific and intraspecific relationships. In addition, Batten (1977) and Burger (1981) found that wading birds were extremely sensitive to disturbance in the northeastern United States. Klein (1993), in studying water bird response to human disturbance, found that as the intensity of the disturbance increased, the avoidance response by the birds increased, and found out-of-vehicle activity to be more disruptive than vehicular traffic; Freddy et al. (1986) and

Vaske (1983) also found the latter to be true. In regards to waterfowl, Klein (1989) found migratory dabbling ducks to be the most sensitive to disturbance and migrant ducks to be more sensitive when they first arrived, in the late fall, than later in winter. She also found gulls and sandpipers to be apparently insensitive to human disturbance, with Burger (1981) finding the same to be true for various gull species.

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Travel routes can disturb wildlife outside the immediate trail corridor (Miller et al. 2001). Miller et al. (1998) found bird abundance and nesting activities (including nest success) increased as distance from a recreational trail increased in both grassland and forested habitats. Bird communities in this study were apparently affected by the presence of recreational trails, where “generalists” (American robins) were found near trails and “specialist” species (i.e. grasshopper sparrows) were found farther from trails. Nest predation was also found to be greater near trails (Miller et. al 1998).

Disturbance can cause shifts in habitat use, abandonment of habitat and increase energy demands on affected wildlife (Knight and Cole, 1991). Flight in response to disturbance can lower nesting productivity and cause disease and death. Hammitt and Cole (1998) conclude that the frequent presence of humans in “wild land” areas can dramatically change the normal behavior of wildlife mostly through “unintentional harassment.”

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Public Review and Comment

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft CCP/EA for Wallkill River National Wildlife Refuge.

Determination (Check one below)

☐ Use is Not Compatible

☒ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility

Although cross-country skiing and snowshoeing could potentially cause wildlife disturbances, these uses occur during a time of year when many species are either not present on the refuge or are not as active as other times of the year. The refuge will make every effort to minimize disturbance to wildlife that do use the refuge at this time of year. Trails will be monitored to make sure that conditions do not pose adverse effects to wildlife populations and their habitats, especially threatened or endangered species. If such species are found utilizing habitats near trails, the trails would be closed or rerouted to ensure habitat and wildlife protection.

Potential conflicts with other public uses such as hunting, interpretation, etc. will be minimized by using trailhead signs and other media to inform the visitors about current public use activities.

Justification

The Service and the National Wildlife Refuge System maintain goals of providing opportunities to view wildlife. Cross-country skiing and snowshoeing provide additional opportunities for wildlife-viewing, thus contributing to refuge purpose #5. It is likely that users may take the time to learn more about the refuge and become supporters of the National Wildlife Refuge System.

The stipulations expressed above will prevent or minimize any impacts to refuge purposes #1, #2, and #4. The use is not anticipated to have any impact on refuge purpose #3.

In determining compatibility, the cumulative effects of all public uses on trails are considered. Due to the limitations put on these activities, the seasonal timing, and the historically low use, disturbance from skiers and snowshoers is not expected to greatly increase the disturbance to wildlife. We can therefore conclude that cross-country skiing and snowshoeing will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the refuge.

Project Leader Edmund Henry 1/27/09
(Signature) (Date)

Concurrence

Regional Chief Anthony J. Legier 1/29/2009
(Signature) (Date)

Mandatory 10 year re-evaluation date Jan. 29, 2019
(Date)

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Compatibility Determination

Use

Livestock Grazing for Habitat Management

Refuge Name

Wallkill River National Wildlife Refuge

Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past.. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

Refuge Purpose(s)

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to conserve and enhance populations of fish, wildlife, and plants within the refuge, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

“the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions....” 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986)

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” (16 U.S.C. 742f(a)(4)) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. “16 U.S.C. 742f (b)(1) (Fish and Wildlife Act of 1956)

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

National Wildlife Refuge System Mission

The mission of the National Wildlife 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.”

Description of Use

(a) What is the use? Is it a priority public use? The use is livestock grazing for habitat management. Livestock grazing is not 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 management activity but because grazing is a controversial activity on some refuges, particularly in the western part of the country, we are doing a compatibility determination on it.

(b) Where will the use be conducted? The use will be conducted to manage grassland, wet meadow, and shrubland habitat types on the refuge. The refuge will write a habitat management plan that will state specifically where livestock grazing will be used to manage certain habitat types. The refuge typically allows grazing on three to five sites, totaling about 20 acres.

(c) When will the use be conducted? Typically in the growing season which is late March through early October.

(d) How will the use be conducted? Through cooperative agreements and special use permits, we will work with livestock owners to graze refuge lands for specific periods throughout the growing season. The program includes provisions for fencing the animals, maintenance of the fence and care of the animals by the permittee. The animals will be delivered and removed by the permittee.

(e) Why is this use being proposed? The use is being proposed to control vegetation, improve microtopography in bog turtle habitat, and maintain grasslands for grassland-dependent birds and wintering raptors.

Availability of Resources

A grazing program will create minor staff costs from biological monitoring, law enforcement, and administration. Additional equipment, such as temporary fencing, may be required from the Service. Cooperators may be required to provide, install, and remove temporary fencing and transport livestock. A permit fee may be required. Of the costs listed below, which reflect our current total operations costs associated with managing the refuge, approximately 5 percent will be dedicated to managing a grazing program.

Staff costs: 0.05 GS 11 FTE	\$3,000
Vehicle fuel: (\$4.00/gal) (1 gal/trip) (50 trips).....	\$200
Equipment, facility use/replacement: vehicles, mowers, hand tools, fencing	\$2,000
TOTAL.....	\$5,200

The financial and staff resources necessary to provide and administer this use at its current level and at the level described in the final CCP are now available and we expect them to continue in the future subject to the availability of appropriated funds.

Anticipated Impacts of the Use

Grassland birds have declined more consistently and over a wider geographic area than any other group of North American birds over the last 30 years (Robbins et al. 1986, Askins 1993, Knopf 1995, Askins 1997, Sauer et al. 1997). As a result, most grassland birds appear on lists of rare and declining species (NYSDEC 1997, Pashley et al. 2000, U.S. NABCI Committee 2000, U.S. Fish and Wildlife Service 2002). Moreover, all of these species can be found at the refuge. Without active management, refuge grasslands soon will become dominated by purple loosestrife or dense shrub land (Mitchell and Shryer 2000). Consequently, the refuge would no longer provide suitable habitat for grassland-dependent birds.

With proper timing, stocking rate, and frequency, grazing can be used to achieve wildlife objectives (U.S. Fish and Wildlife Service 1982). Mitchell et al. (2000) describe several benefits of grazing for managing habitat for

breeding grassland birds. These benefits include reduced thatch accumulation, increased structural complexity, and suppressed plant succession. Smith (1997), states that grazing is a cost-effective means of suppressing plant succession, which benefits grassland birds. Herkert et al. (1993) recommend rotational grazing as a means to provide a structural mosaic of grasslands to meet the respective nesting requirements of each grassland bird species.

Light to moderate grazing is beneficial to several grassland birds (Bollinger 1991, Jones and Vickery 1997), particularly those that prefer to nest in fields with short, sparse to intermediate height and density vegetation (Mitchell et al. 2000). These species include upland sandpiper, grasshopper sparrow, savannah sparrow, eastern meadowlark, and bobolink (Herkert et al. 1993). Kirsch and Higgins (1976) indicate that periodic light grazing may be desirable for the long-term maintenance of suitable upland sandpiper habitat and for maintaining the best ecological condition of grasslands. Dechant et al. (2001a) recommend moderate rotational grazing as a means of providing optimal nesting habitat for upland sandpipers. Vickery (1996) states that light-to-moderate grazing is beneficial to grasshopper sparrows in the Northeast. Light to moderate grazing is recommended as a management technique for grasslands used by nesting short-eared owl (Dechant et al. 2001b) and bobolink (Dechant et al. 2001c). Swanson (2001) recommends light grazing as a technique to create medium height and density vegetation preferred by nesting savannah sparrows.

Intensive grazing may benefit grassland birds that nest in fields with the shortest, sparsest vegetation, including horned lark and vesper sparrow (Skinner et al. 1984, Herkert 1991, Herkert et al. 1993). Wakeley (1978), Baker and Brooks (1981), and Bechard (1982) demonstrated that tall, dense vegetation impedes the ability of several species of *Buteo* hawks to capture prey. Thus, higher stocking rates may also benefit wintering raptors by increasing availability of rodent prey.

Nest trampling, however, may be an important consideration when choosing grazing as a management tool for refuge grasslands. Smith (1992) mentions this potential threat to Henslow's sparrows breeding in areas grazed by cattle. Livestock trampling has damaged upland sandpiper nests (Ailes 1980).

Bog turtle habitat is in an intermediate state of succession, and in some cases is threatened by invasive exotic plants (USFWS 2001). Unless succession is set back by natural processes (flooding by beaver, fire, grazing by wildlife, etc.) and exotic plants are controlled, the habitat may become less suitable, and eventually unsuitable, for bog turtles. Active management and maintenance, such as grazing, may be required at some sites to replace the natural processes that have been lost and to control exotic plants in order to restore or maintain habitat quality. Goats, sheep and cattle have been found to eradicate invasive species effectively in bog turtle habitat (Tesauro 2001). When grazing in bog turtle habitat, cows in particular trampled and compacted several years' worth of litter, broke up rhizomes, and created perfect hollow-hummock topography. Often, the place to look for bog turtles in cow pastures is in cow footprints. Tesauro's article makes no mention of any negative impacts on bog turtles from grazing.

Public Review and Comment

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft Comprehensive Conservation Plan for Wallkill River National Wildlife Refuge.

Determination

☐ Use is not compatible

☒ Use is compatible, with the following stipulations

Stipulations Necessary to Ensure Compatibility

To avoid overgrazing and excessive trampling, the refuge will attempt to use cattle on sites larger than one acre and goats and sheep on smaller sites. To reduce nest trampling, grazing activities will not be initiated in sensitive areas on the refuge until most grassland birds have fledged young (typically after July 15 in northern New Jersey).

Intensive grazing throughout the refuge would yield vegetation too denuded to provide habitat for grassland birds that nest in tall, dense vegetation, including northern harrier, short-eared owl (Duebbert and Lokemoen 1977), and Henslow's sparrow (Smith 1992). This grazing regime would also be detrimental to wintering short-eared owls and northern harriers at the refuge that rely on thick, herbaceous vegetation to roost (Kahl and Holcomb, U.S. Fish and Wildlife Service 2003, personal observation). High stocking rates would similarly affect grassland birds that nest in intermediate height and density vegetation, including upland sandpiper, grasshopper sparrow, savannah sparrow, eastern meadowlark, and bobolink. Grassland areas will be managed as a complex and grazed rotationally to provide heterogeneous grassland structure. This strategy will maximize the potential to provide habitat for the greatest diversity and abundance of grassland bird species.

Cows will be kept out of waterbodies to reduce erosion, siltation, and pollution.

Justification

Implemented with the stipulations listed above, livestock grazing for habitat management will contribute to the purposes of the refuge by maintaining and enhancing the habitat for grassland-dependent migratory birds, wintering raptors and bog turtles. Livestock grazing also contributes to the mission of the Refuge System, by supporting refuge purposes #1, #3 and #5 through habitat enhancement and management provided by the use. Refuge purposes #2 and #4 will likely not be impacted by this use. Any negative impacts associated with grazing are discussed in the anticipated impacts section and addressed in the stipulations section in order to minimize any effect they may have on trust resources. Therefore, it is the determination of the Service that livestock grazing habitat management is a compatible use of the Wallkill River refuge.

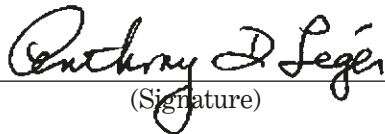
Project Leader


(Signature)

1/27/09
(Date)

Concurrence

Regional Chief


(Signature)

1/29/2009
(Date)

Mandatory 10-year re-evaluation date

Jan. 29, 2024
(Date)

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Compatibility Determination

Use

Motorized and Non-Motorized Boating to Promote Priority Public Uses

Refuge Name

Wallkill River National Wildlife Refuge

Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, however, lands could be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

Refuge Purposes

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to conserve and enhance populations of fish, wildlife, and plants within the refuge, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

“the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions....” 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986)

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” 16 U.S.C. 742f(a)(4) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. “16 U.S.C. 742f (b)(1) (Fish and Wildlife Act of 1956)

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

National Wildlife Refuge System Mission

The mission of the National Wildlife 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.”

Description of Use

(a) What is the use? Is it a priority public use? The uses are motorized and non-motorized boating. Motorized and non-motorized boating are not priority public uses 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). Although these uses are not priority public uses, they facilitate participation in a variety of priority wildlife-dependent activities, including fishing, hunting, environmental education and interpretation, and wildlife observation and photography.

(b) Where will the use be conducted? Boat launch sites can be accessed on Route 565, Bassett's Bridge and on Oil City Road. With the final CCP, we will provide an additional boat launch site on County Route 565.

Motorized and non-motorized boating will occur only along the Wallkill River and areas accessible from the river during flooded stages. Boating will not be permitted on refuge ponds or other bodies of water except for the purposes of game retrieval during hunt seasons (see map B-6).

(c) When will the use be conducted? Motorized and non-motorized boating will be allowed year-round. As the refuge does not own the entire river, the refuge cannot limit boating activities on certain portions of the river within the refuge. The presence of endangered species could result in limitations on areas of the river or its tributaries owned by the refuge.

(d) How will the use be conducted? The refuge offers three boat access areas: Oil City Road, Bassett's Bridge and Route 565. As stated above, we propose through the final CCP to add one additional boat access site on County Route 565. The refuge will offer parking at or near each of these three sites. Additional boat access points are available north and south of the refuge.

(e) Why is this use being proposed? These uses will increase refuge visitors' opportunities for wildlife observation and wildlife photography. Non-motorized boating, more specifically, will provide a means for hunters and anglers to reach designated areas during regulated seasons. While motorized and non-motorized boating may not be a priority public use, they will facilitate participation in priority wildlife-dependent recreation including all six of the National Wildlife Refuge System's priority public use activities.

Availability of Resources

In addition to the physical infrastructure related to boating (see section (b)), financial and staff resources are needed as follows:

Maintenance and seasonal demand of three boat launch sites	40 hours
Habitat maintenance along the river at boat launch sites	20 hours
Patrol to ensure regulatory compliance	20 hours
Administration of visitor use of boats and boat ramps on the refuge	10 hours
Total Hours (.04 FTE).....	90 hours

90 hours (.04FTE)	\$2,700
Materials and fuel associated with ramp maintenance	\$250
TOTAL.....	\$2,950

The financial and staff resources necessary to provide and administer this use at its current level and at the level described in the final CCP are now available and we expect them to be available in the future.

Anticipated Impacts of the Use

The use of motorized and non-motorized watercraft at Wallkill River refuge will be monitored to ensure the activity will not have an adverse impact on wildlife habitat, or the management of migratory birds and other wildlife species. There is potential for wildlife disturbance due to noise of boat motors, proximity of boats to wildlife, speed of boats, and time of operation. However, these disturbances generally do not occur on the Wallkill River because it is too narrow and shallow for high-speed boats. Maintenance activities on the river to improve navigability could disturb wildlife habitats and nursery habitats for fish, but this would only be a temporary and minor disturbance. Litter from inappropriate use could impact the quality of the visitor experience and in some cases threaten wildlife and wildlife habitats. Bank erosion and vegetation damage are possible at boat launch sites. We have generally not observed these disturbances at the refuge and do not anticipate experiencing them as a result of this use.

Public Review and Comment

As part of the CCP process for the refuge, this compatibility determination underwent extensive public review, including a comment period of 66 days following the release of the draft CCP/EA.

Determination

_____ Use is not compatible

 X Use is compatible, with the following stipulations

Stipulations Necessary to Ensure Compatibility

The Code of Federal Regulations (CFR) allows refuge managers to authorize the use of watercraft in national wildlife refuges. The use of motorized watercraft could adversely affect waterfowl and resident wildlife if guidelines are not in place to ensure operation to minimize such impacts.

We have the responsibility of ensuring that all of the activities that take place within the refuge occur in a manner that is consistent with the purposes of the refuge. As such, we will review all of the areas of the rivers within and adjacent to the refuge and determine the maximum allowable speed. Because the river is small, curvy and can be clogged with navigational hazards, in no case will the speed limit exceed 25 miles per hour. We will review additional speed restrictions imposed by the towns that border or encompass the rivers and will respect any speed limits that are in place.

All of the provisions of 50 CFR §27.31 and 27.32 will be imposed as well. Included in this section is the requirement that “No operator or person in charge of any boat shall operate or knowingly permit any other person to operate a boat in a reckless manner, or in a manner so as to endanger or be likely to endanger any person, property or wildlife.”


Boaters will use only established trails and other areas open to the public and not venture into closed areas. All boats can be launched only from designated launch sites.

To reduce the risk of introducing invasive species, boaters will be required to clear aquatic vegetation and animals from their boats before and after landing.


Justification

The National Wildlife Refuge System Improvement Act of 1997 (P.L. 105-57) identifies six legitimate and appropriate uses of wildlife refuges: environmental education and interpretation, hunting, fishing, and wildlife observation and public recreational photography. These priority public uses are dependent upon healthy wildlife populations. Where these uses are determined to be compatible, they are to receive enhanced consideration over other recreational uses in planning and management. Boating is to be used only as a means to facilitate the priority public uses identified above.

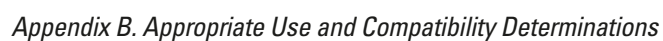
Boating on areas of the Wallkill River where the refuge has jurisdiction will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established. By applying the stipulations in the above section, this activity will contribute to refuge purposes #3 and #5 by fostering an appreciation for water quality and aquatic habitats and by supporting opportunities for priority public uses. The use will not materially impact refuge purposes #1 and #4. Any disturbance to waterfowl (refuge purpose #2) will be minimal and offset by the contributions made by the activity toward refuge purposes #3 and #5.

Project Leader  1/27/09
(Signature) (Date)

Concurrence

Regional Chief  1/29/2009
(Signature) (Date)

Mandatory 10-year re-evaluation date Jan. 29, 2019
(Date)



Compatibility Determination

Use

Haying for Habitat Management

Refuge Name

Wallkill River National Wildlife Refuge

Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

Refuge Purposes

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to conserve and enhance populations of fish, wildlife, and plants within the refuge, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

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

“the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions.... 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986)

“for the development, advancement, management, conservation, and protection of fish and wildlife resources.... 16 U.S.C. 742f(a)(4); for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. “ 16 U.S.C. 742f(b)(1) (Fish and Wildlife Act of 1956).

National Wildlife Refuge System Mission

The mission of the National Wildlife 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.”

Description of Use

(a) What is the use? Is it a priority public use?

The use is haying, for the purpose of grassland habitat management. The removal of baled grass from the refuge for use by private parties constitutes an economic use governed by 50 C.F.R §29.1. Pursuant to those regulations, we must determine, among other things, that the use be compatible with and contributes to the refuge purposes or the mission of the National Wildlife Refuge System. In this document, we make positive findings in both those regards. However, we note that, should the refuge elect to conduct mowing activities on its own or through a contractor -- as opposed to issuing special use permits to private parties that include hay removal -- such activities would constitute a management action for which no compatibility determination is required.

The National Wildlife Refuge System identifies hunting, fishing, wildlife observation and photography, and environmental education and interpretation as the six priority recreational public uses. Therefore, haying for grassland habitat management is not a priority public use of the Refuge System under the National Wildlife Refuge System Administrative Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997.

Haying is the cutting and processing (typically baling) of grasses and forbs, with subsequent removal to an off-refuge location. Third parties will conduct haying on grasslands owned by the refuge. Haying an area is usually conducted as a single event in any one year, but may be repeated periodically to remove undesirable grasses and forbs, remove accumulated plant biomass, remove or reduce woody vegetation; or provide a desired vegetative condition. Haying is a technique that can be effective in maintaining and managing grasslands and open fields for a variety of nesting and migratory birds, and maintaining wetlands that serve as habitat for rare species, in accordance with refuge goals and objectives. As a result, this use contributes to the mission of the Wallkill River National Wildlife Refuge.

(b) Where will the use be conducted?

The use will be conducted to manage grassland, wet meadow, and shrub land habitat types on the refuge. Haying will be allowed in fields at the discretion of the refuge manager in the exercise of sound professional judgment. We will annually evaluate the condition of each field and determine whether mowing is necessary to meet habitat and wildlife objectives set forth in our Habitat Management Plan. The refuge will hay between 250 and 450 acres of grassland per year (see map 1). That represents approximately 5 percent to 8 percent of the refuge.

(c) When will the use be conducted?

Haying will be conducted after July 15 through October 31. That time-of-year restriction allows the young of grassland-nesting birds to mature to flight stage before haying starts.

(d) How will the use be conducted?

On an annual basis, individuals will be authorized to cut hay via special use permit issued by the refuge manager. The terms of the permit will ensure compatibility through application and implementation of Service policy and refuge-specific stipulations.

Currently, refuge grasslands and open fields are mowed or hayed every 1 to 3 years, depending on weather and field conditions, local farmers' need for the hay, and refuge wildlife and habitat management goals. Its frequency and intensity will be determined by what is needed to suppress broadleaf and woody plant invasion and develop a mosaic of grassland vegetation in fields where open grassland is desired.

There is no selection process for haying permittees on the Wallkill River refuge, due to a general lack of interest by local farmers. In addition, due to the dryness of the grass, the hay harvested is of poor quality and has little or no market value. Instead, local farmers who ask to hay fields are issued a permit. The haying permittee is not required to pay for the permit; however, the refuge may request up to 5 bales of hay per year from the permittee for on-refuge use.

(e) Why is this use being proposed?

This compatibility determination proposes to permit haying as a technique to manage grasslands for grassland-dependent birds, wintering raptors and bog turtles. The use is a cost-effective and biologically sound method of managing these early successional habitats.

Grassland birds have declined more consistently and over a wider geographic area than any other group of North American birds over the last 30 years (Robbins et al. 1986, Askins 1993, Knopf 1995, Askins 1997, Sauer et al. 1997). As a result, most grassland birds appear on lists of rare and declining species (NYSDEC 1997, Pashley et al. 2000, U.S. NABCI Committee 2000, U.S. Fish and Wildlife Service 2002). Moreover, all of those species can be found at the refuge.

However, without active management, refuge grasslands soon will become dominated by purple loosestrife or dense shrub land (Mitchell and Shryer 2000). Without these high-quality early and intermediate successional habitats, the refuge would no longer provide suitable habitat for grassland-dependent birds, wintering raptors or bog turtles.

Haying combined with mowing is a useful and effective grassland management technique (U.S. Fish and Wildlife Service 1982). Mitchell et al. (2000) state that haying and mowing are economic means of controlling invasion of grasslands by forbs and woody plants. Further, haying is generally a more convenient technique to apply than prescribed fire or grazing. Herkert et al. (1993) recommend rotational haying and mowing as a grassland management alternative with subunits left idle. That strategy may provide a complex of grassland successional stages to meet the respective nesting requirements of a diversity of grassland bird species.

More specifically, haying and mowing are recommended techniques for managing grasslands used by nesting northern harrier (Berkey et al. 1993, Dechant et al. 2001a), upland sandpiper (Kirsch and Higgins 1976, Dechant et al. 2001b), short-eared owl (Tate 1992, Dechant et al. 2001c), horned lark (Dinkins et al. 2001), grasshopper sparrow (Dechant et al. 2001d, Vickery 1996), Henslow's sparrow (Smith 1992, Herkert 2001), vesper sparrow (Camp and Best 1993, Dechant et al. 2001e), savannah sparrow (Swanson 2001), bobolink (Bollinger and Gavin 1992, Dechant et al. 2001e), and eastern meadowlark (Lanyon 1995, Hull 2000).

Bog turtle habitat is in an intermediate state of succession and, in some cases, is threatened by invasive exotic plants (USFWS 2001). Unless succession is set back by natural processes (e.g., flooding by beaver, fire, grazing by wildlife) and exotic plants are controlled, the habitat may become less suitable and, eventually, unsuitable for bog turtles. Active management and maintenance, such as haying and mowing, may be required at some sites to replace the natural processes that have been lost and to control exotic plants to restore or maintain habitat quality.

Availability of Resources

A haying program will create minor staff costs for biological monitoring, law enforcement, and administration. No additional equipment, facilities, or improvements will be required from the Service. Cooperators will be required to use their own equipment. A permit fee may be required. The amount of that fee will be based on the level of demand from cooperators and the value of the hay.

Staff costs	\$3,600	0.08 GS 11 FTE
Vehicle fuel	\$ 450	(\$4.00/gal) (2.5 gal/trip) (50 trips)
Equipment, facility use/replacement	\$ 500	vehicles, mowers, hand tools
TOTAL	\$4,550	

The financial and staff resources necessary to provide and administer this use at its current level and at the level described in the final CCP are now available and we expect them to be available in the future.

Anticipated Impacts of the Use

Haying will result in short-term disturbances and long-term benefits to both resident and migratory wildlife using the refuge. Short-term impacts will include the disturbance and displacement of some wildlife by equipment operation. Haying activities will also result in short-term loss of habitat for species using those areas for nesting, feeding, or resting. That will be partially mitigated by limiting all cutting and haying until after July 15, when most grassland nesting birds have fledged.

Haying or mowing should be avoided during the early nesting season to avoid the destruction of the nests, eggs, and young of breeding grassland birds, including northern harrier (Berkey et al. 1993, Dechant et al. 2001a), upland sandpiper (Lokemoen and Beiser 1997, Dechant et al. 2001b), short-eared owl (Tate 1992), grasshopper sparrow (Dechant et al. 2001d, Vickery 1996), Henslow's sparrow (Smith 1992, Herkert 2001), vesper sparrow (Bryan and Best 1994, Dechant et al. 2001e), savannah sparrow (Dale et al. 1997, Swanson 2001), bobolink (Bollinger and Gavin 1992, Dechant et al. 2001e), and eastern meadowlark (Granfors et al. 1996, Hull 2000).

Other short-term impacts will be noise and exhaust fumes generated by the tractors and associated farm equipment; however, this is not a major impact. The resulting habitat will improve conditions for most of the species adversely affected by the short-term negative impacts.

We use haying to improve potential (but not active) bog turtle habitats on the refuge. We do not currently allow haying on the one active bog turtle site on the refuge, and no haying would occur on any active bog turtle site until it has been confirmed that the bog turtles have left the area for the season.

A managed haying and mowing program will have positive impacts to the refuge's grassland habitat and wildlife. Haying suppresses the invasion of grasslands by perennial forbs and shrubs. Consequently, grass-dominated plant communities are maintained. Further, rotational haying will help to develop a mosaic of grassland vegetation. In conjunction with a native grassland restoration program, the refuge will have higher quality grassland habitats. Diverse, native-dominated grasslands provide habitat for a greater diversity and abundance of grassland birds, wintering raptors and bog turtles.

Public Review and Comment

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft CCP/EA for Wallkill River National Wildlife Refuge.

Determination (check one below)

☐ Use is Not Compatible

☒ Use is Compatible with the following stipulations

Stipulations Necessary to Ensure Compatibility

- Haying and mowing (brush cutting) will generally occur between July 15—October 31.
- Permittees haying/mowing more than one property must:
 - 1) Finish one property before starting the next property.
 - 2) Remove ALL farm vehicles/equipment and bales of hay before starting the next property.
- Permittee must remove all bales of hay.
- Permittees must remove ALL farm vehicles/equipment and bales of hay from the refuge no later than October 31 of each year.

- Permittee is responsible for providing and maintaining the necessary equipment. The U.S. Government will not be liable for damage to any privately owned equipment. The U.S. Government will not provide any equipment for permittee use.
- Permittee must ensure that all individuals assisting in the haying, baling, and transportation of hay from the refuge understand and comply with refuge regulations.
- All farm vehicles and equipment used on the refuge will comply with OSHA required protective equipment in FWM Part 241, “Safety Operations,” Chapter 2, “Motorized Vehicles and Equipment.”
- Permittee recognizes that heated equipment could ignite surrounding grasses and will take precautions to prevent wildfires. Refueling of vehicles will only occur in parking areas along public roads or in refuge parking lots.
- Permittee will not bring firearms onto refuge property.
- Permittee will immediately notify the refuge manager of any emergency incidents, property damage, personal injuries, or trespass by other individuals. Permittee will comply with all rules and regulations. Any questions or concerns must be discussed with the refuge manager before permittee takes any unauthorized action. Ignorance is not acceptable as an excuse for noncompliance.
- Permittee will notify the refuge manager no later than 2 days after completing haying/mowing for the season. Permittee should also report opportunities to improve the mowing program and any concerns encountered during mowing operations.
- Gate keys must be returned within one week after project completion.
- The U.S. Government will not be liable for any injury or loss to the permittee or any of the permittee’s assistants. Each special use permit will include a standard indemnity/hold harmless clause as approved by the solicitor.
- Permittee will comply with all state and local authorities

Justification

Haying and mowing will contribute to the purposes of the refuge by maintaining and enhancing habitat for grassland-dependent migratory birds, wintering raptors and bog turtles for which the refuge was established. Haying for the grassland habitat management program also contributes to the mission of the refuge system, by implementing the following goals of the refuge system’s strategic plan: 1. Provide healthy fish, wildlife and plant populations, 3. Maintain productive habitats, and 5. Provide quality environments. In addition, haying for habitat management will support refuge purposes #1 and #2 by improving early successional habitats. Indirectly, it will also support refuge purpose #4 through increased migratory bird populations. Refuge purposes #3 and #5 will not be materially impacted by this use. Based on the analysis above, and consistent with our governing regulations and the stipulations listed above, we conclude that haying for habitat management is a compatible use for the Wallkill River National Wildlife Refuge.

Project Leader Edmund Hays 1/27/09
(Signature) (Date)

Concurrence

Regional Chief Anthony D. Legier 1/29/2009
(Signature) (Date)

Mandatory 10-year re-evaluation date Jan. 29, 2019
(Date)

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Compatibility Determination

Use

Mosquito Management according to Service Policy

Refuge Name

Wallkill River National Wildlife Refuge

Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

Refuge Purposes

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to conserve and enhance populations of fish, wildlife, and plants within the refuge, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

“the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions....” 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986)

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” 16 U.S.C. 742f (a)(4) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. ” 16 U.S.C. 742f (b)(1) (Fish and Wildlife Act of 1956)

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

National Wildlife Refuge System Mission

The mission of the National Wildlife 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.”

Description of Use

(a) What is the use? Is it a priority public use? The use is mosquito surveillance and, if warranted, larval mosquito management. Mosquito management is not 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).

(b) Where will the use be conducted? The use will occur in areas specified in a refuge-issued special use permit, as needed to protect human health and wildlife and domestic animal safety from mosquito-borne disease.

(c) When will the use be conducted? Mosquito control will occur only as needed, and on an irregular and short-term basis when it is necessary to protect the health and safety of humans, wildlife, or domestic animals.

Surveillance activities associated with this use will be conducted from April through October under the conditions of this compatibility determination, a mosquito management plan and a special use permit, all in accordance with the Interim Guidance for Mosquito Management on national wildlife refuges. Some mosquito control activities could occur throughout the mosquito/fly season.

(d) How will the use be conducted?

On October 15, 2007, the Service published in the Federal Register its “Draft Mosquito and Mosquito-Borne Disease Management Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997.” Until the draft policy is finalized, we will follow the “Interim Guidance for Mosquito Management on National Wildlife Refuges,” prepared in spring 2005. This document provides refuges with interim guidance on addressing mosquito-associated health threats in a consistent manner. Like the draft policy, the guidance states that refuges will not conduct mosquito monitoring or control unless it is necessary and compatible to protect the health of a human, wildlife, or domestic animal population. If there is a declared health emergency, the Service will work with local and state mosquito managers to minimize any risks to human health.

Mosquito monitoring and control on the refuge will be managed under a mosquito management plan. This plan will provide the specifics on how and when the refuge will allow monitoring and, if necessary, control of mosquitoes on refuge-owned lands. All mosquito related activities will be carried out by state or county agencies, typically the Sussex County Office of Mosquito Control (Division).

The Division is responsible for monitoring larval and adult mosquitoes on the refuge. The purpose of monitoring is to detect changes in mosquito populations that indicate an increased risk to human or wildlife health. In addition, adult mosquitoes collected from the refuge can be tested for the presence of pathogens. The Division will monitor mosquito populations from April through October. Additional details and restrictions on monitoring within refuge boundaries will be described in an annual special use permit issued to the Division.

The goal of mosquito management at Wallkill River refuge is to identify low-level health threats and allow compatible treatment to avoid emergency situations. Because there is a documented history of mosquito-borne diseases in this area, the refuge will almost invariably need to monitor mosquitoes on an annual basis. The refuge will develop a mosquito management plan that will use predetermined threat levels to decide when and how to treat mosquitoes. This management plan is being designed by the Service to ensure that there will be no significant adverse impacts on the refuge’s wildlife and habitats. Additional details and restrictions on treating mosquito populations within refuge boundaries will be described in an annual special use permit issued to the Division. Treatment regimens may vary annually, depending on the current conditions of disease presence and mosquito abundance. The refuge will generally treat mosquitoes with the pesticide *Bacillus thuringiensis israelensis*.

A health emergency indicates an imminent risk of serious human disease or death, or an imminent risk to populations of wildlife. A health emergency represents the highest level of mosquito-associated health threats.

Health emergencies will be determined by the Sussex County Health Department and documented with local and current mosquito population and disease monitoring data.

The long-term solution for suppressing mosquito populations at the refuge is to restore the wetland hydrology in the habitats that produce the greatest abundance of mosquitoes. Fish and other aquatic species play a major role in controlling mosquito populations, and the Service often restores wetlands in such a way that it allows fish to feed on mosquito larvae, which then reduces mosquito populations.

Mosquito control will be applied using hand and aerial dispersal. Except in cases of officially determined health emergencies, any method we use to manage mosquito populations within the refuge will conform to applicable Federal laws such as the Endangered Species Act. Habitat management and pesticide uses for mosquito control will consider the integrity of non-target populations and communities. They will also be consistent with integrated pest management strategies and with existing pest management policies of the Department of the Interior and the Service.

State/local public health or mosquito control agencies will conduct surveillance and will carry out methods including dip samples, light/CO₂ traps, and landing rates. *Bacillus thuringiensis* will be applied following the limitations included in the product EPA label, an annual Fish and Wildlife Service pesticide use permit, and an annual refuge special use permit.

(e) Why is this use being proposed?

There are four mosquito-borne viral diseases historically or currently endemic/enzootic in New Jersey: Eastern Equine Encephalitis (EEE), St. Louis Encephalitis (SLE), West Nile Virus (WNV), and La Crosse Encephalitis (LAC). All are zoonotic diseases maintained in wildlife that only secondarily affect humans. The most serious of these for humans is EEE, although it is fortunately relatively rare. As of 2008, the most recent human activity in New Jersey was in 2003, when 3 cases were identified in the southern half of the state. However, a few mosquitoes test positive for the EEE virus almost every year in New Jersey, indicating that the virus is being maintained within the wildlife cycle.

Sussex County Health Department has determined that there are endemic mosquito-borne diseases in the vicinity of the Refuge. The major mosquito-borne disease of concern at Wallkill River refuge is West Nile Virus. Since its discovery in North America in 1999, WNV has spread across the continent, and is considered endemic/enzootic throughout most of the continental U.S. Identification of WNV infected mosquitoes in Sussex County nearly every year since 2000 indicates that the virus is locally maintained within the wildlife cycle.

The mosquito species of primary concern at Wallkill NWR are *Aedes vexans* and *Aedes (Ochlerotatus) trivittatus*. These are floodwater species that breed in rain-filled pools during the late spring and summer. *Aedes vexans* has been implicated as a bridge vector in the transmission of both EEE and WNV. The vectoring capacity of *Aedes (Ochlerotatus) trivittatus* is less known, although it has been found on occasion to carry WNV. However, because this latter species is almost always found in association with *Aedes vexans*, it is not possible to manage it separately.

Due to the historic presence of the viral diseases mentioned above, and the species of mosquitoes present on the refuge, it is necessary to annually monitor and sometimes even treat mosquito populations in order to try to avoid a human health emergency.

Availability of Resources

Any spraying will be conducted by the county or state. Refuge resources will be dedicated to monitoring, communication with the public, and preparing special use permits. No matter what decision is made relative to mosquito spraying, some refuge staff resources will be used to address the issue of spraying on the refuge.

Meetings and Consultations with County Mosquito Control Commission	10 hours
Special Use Permit Preparation	15 hours
Communications with the media	15 hours
Communications with elected officials	5 hours
Communications with local residents	10 hours
Monitoring of spraying activities	25 hours
Total Hours (.04 FTE).....	80 hours

TOTAL (80 hours (.04FTE) @ \$30/hour)\$2,400

The financial and staff resources necessary to provide and administer this use at its current level and at the level described in the final CCP are now available and we expect them to be available in the future.

Anticipated Impacts of the Use

For purposes of this discussion, mosquitoes will be divided into those that develop in ephemeral water bodies and those that develop in permanent to semi-permanent water; since the refuge has both types of habitats.

Mosquito Larvae

Mosquitos in ephemeral water bodies have evolved to lay eggs in dry or moist areas that will flood later. In these unpredictably flooded habitats such as summer flood pools and storm-flooded salt marshes, there are few predators that have been identified to rely principally on mosquito larvae as a source of food. The unreliable nature of mosquito larvae as prey in these habitats prevents the development of any close predator-prey relationship unless the predator shares diapausing strategies similar to those of floodwater mosquitoes. The only predators in these habitats that rely on mosquito larvae for prey are other mosquitoes. Although there are few predators that specialize on mosquito larvae in these habitats, generalist predators such as beetles (larvae and adults), backswimmers, and some odonates (damselflies and dragonflies) will take advantage of the temporary abundance of mosquitoes if the timing of arrival into the habitats coincides with the presence of mosquito larvae.

Some ephemeral aquatic habitats, however, have flooding regimes that are more predictable. In at least two of these habitats, vernal pools and treeholes, we see the development of very close predator-prey relationships with mosquito larvae. The predictable abundance of mosquitoes and general paucity of other potential prey species during the early spring in these pools has probably contributed to this specialization. Other predators in vernal pools will feed opportunistically on mosquito larvae.

Mosquitoes that colonize permanent to semi-permanent bodies of water lay eggs on the surface. In many natural bodies of water; the larvae of these species must develop in the presence of an oftentimes-diverse invertebrate predator community. The co-occurrence of mosquito larvae and predatory invertebrates is more predictable in these habitats, but the diversity of other potential prey species may preclude the development of specialized predator-prey relationships. Although many of the predators in these habitats can be considered generalists with regard to prey consumption, experimental evidence suggests that mosquito larvae, when available, are a preferred prey of some species (Helgen 1989; Urabe et al. 1990; Robert and Venkatesan 1997; Safurabi and Madani 1999).

Mosquito Adults

Like other aquatic insects with terrestrial adult stages, mosquitoes provide a link between aquatic and terrestrial ecosystems as they convert detritus and aquatic microbial biomass into flying insect biomass. Most adult mosquitoes are relatively short lived. Vertebrate predators include insectivorous birds and bats (Zinn and Humphrey 1981), although mosquitoes often account for only a small percentage of the total biomass consumed. Consumption of mosquitoes by the Indiana bat, *Myotis sodalis*, for example, accounted for up to 6.6 percent of the total diet (Kurta and Whitaker 1998).

As was the case with mosquito larvae, there are apparently few if any predators that specialize on adult mosquitoes. This is probably the result of the unpredictable nature of mosquito emergence. The apparent absence of any specialized predator-prey relationships among adult mosquitoes and predators, however, does not necessarily discount the contribution of mosquitoes to the diet of a wide variety of generalized predators. However, a short-term, localized reduction in adult mosquitoes probably has little effect on the predator community, as these organisms will readily switch to alternate prey (Jensen et al. 1999, Davis and Peterson 2008). The effects of long-term, widespread reduction of adult mosquito populations, especially using broad-spectrum insecticides, has not been studied.

Other Ecological Role of Mosquitoes

Mosquito larvae may feed by one or more of several different mechanisms. They may filter-feed, graze microbial biofilms, or even shred detritus (Merritt et al. 1992). In this sense, mosquitoes are a component of a functioning wetland ecosystem, processing detritus and aquatic microbes, and eventually providing a link between aquatic and terrestrial systems when they emerge.

The impact of reducing the density of mosquitoes in aquatic or terrestrial systems has not been studied. Generalist predators probably switch to alternate prey, which in turn may be impacted by the increased predation. The few specialist predators of mosquito larvae may be impacted the greatest due to the lack of alternate prey and/or the inability of such predators to uncouple from a closely evolved predator-prey relationship.

Bacillus thuringiensis var. israelensis (Bti).

Like other varieties of the natural soil bacterium known as *Bacillus thuringiensis* (Bt), Bti is a stomach poison that must be ingested by the larval form of the insect in order to be effective. Bt contains crystalline structures containing protein endotoxins that are activated in the alkaline conditions of an insect's gut. These toxins attach to specific receptor sites on the gut wall and, when activated, destroy the lining of the gut and eventually kill the insect. The toxicity of Bt to an insect is directly related to the specificity of the toxin and the receptor sites. Without the proper receptor sites, the Bt will simply pass harmlessly through the insect's gut. Bti is specific only to certain primitive dipterans (flies), particularly mosquitoes, black flies, and some chironomid midges. Bti is not known to be directly toxic to nondipteran insects.

The issue of Bti concentration is important with regard to impacts on nontarget organisms. Of particular concern is the potential for Bti to kill midge larvae (family Chironomidae). Chironomid (non-biting midge) larvae are often the most abundant aquatic insect in wetland environments and form a significant portion of the food base for other wildlife (Batzner et al. 1993; Cooper and Anderson 1996; Cox et al. 1998). Laboratory and field studies have shown that Bti is toxic to some larval chironomids, but many factors, such as temperature, water depth, aquatic vegetation and suspended organic matter, may act to reduce its toxicity to chironomids in the environment (Charbonneau et al. 1994; Merritt et al. 1989). Negative impacts on chironomid density/biomass could have deleterious effects on wetland/wildlife food webs and could also lower biodiversity.

There is ample documentation that Bti can kill certain species of chironomids, particularly in the subfamily Chironominae. The effects of a single application of Bti are difficult to predict because of documented differences in toxicity due to formulation, potency, application rate, and timing. There is only one (Hershey et al. 1998; Niemi et al. 1999) published study that examined the long-term, nontarget effects of Bti. In this study conducted in Minnesota, 27 wetlands were sampled for macroinvertebrates over a 6-year period. It appears from this study that any effects would most likely occur within the aquatic communities, as no effects were observed on the bird community (Niemi et al. 1999). In judging the potential for adverse ecological effects of Bti applications, one should consider the non-target aquatic organisms of concern that would be impacted from the potential loss of both mosquito and chironomid larvae. The refuge's mosquito management plan will apply this scientific information for creating the refuge's thresholds for treatment, types of control, and application plans.

Public Review and Comment

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft CCP/EA for Wallkill River National Wildlife Refuge.

Determination

☐ Use is not compatible

☒ Use is compatible, with the following stipulations

Stipulations Necessary to Ensure Compatibility

The refuge will abide by the following national guidance:

- Refuges will not conduct mosquito monitoring or control unless it is necessary and compatible to protect the health of a human, wildlife, or domestic animal population. If there is a declared health emergency, the Service will work with local and state mosquito managers to minimize any risks to human health.
- Refuges may use compatible non-pesticide options to manage mosquito populations that represent persistent threats to health.
- Refuges will collaborate with Federal, State, or local public health authorities and vector control agencies to identify refuge-specific health threat categories. These categories will represent increasing levels of health risks, and will be based on monitoring data.
- Management decisions for mosquito control will be based on meeting or exceeding predetermined mosquito abundance or disease threshold levels that delimit threat categories.
- In the case of officially determined mosquito-borne disease emergencies, we will follow the guidelines described in this document and in the refuge's mosquito management plan. Monitoring data are still required to ensure that intervention measures are necessary.
- All pesticide treatments will follow Service and Department of the Interior pest management and pesticide policies. In an emergency, the pesticide approval process can be expedited.
- Refuges must comply with Federal statutes and Service policies by completing the appropriate documentation prior to mosquito management activities taking place.

In addition to the above stipulations, copies of monitoring data and lab results will be made available to the refuge manager on a weekly basis or as soon as they are available. Dip counts and enumeration of numbers by species will be required prior to each application of Bti.

The refuge manager will be contacted at least one day in advance of each application of Bti so that, at his or her discretion, the manager may accompany the applicators during work on the refuge or may delay application for the protection of refuge resources existent at any particular time. The refuge manager, in consultation with the public health authorities and Service personnel, may authorize application of Bti in instances where there are found West Nile Virus positive mosquitoes, eastern equine encephalitis positive mosquitoes, or West Nile Virus positive birds, all of which would indicate there is a potential risk to public health.

Application of Bti will be, where feasible, by hand spraying a liquid formulation or hand dispersal of a granular formulation of Bti. Application will be performed by trained personnel, and will be in strict conformance with the product label.

Application of Bti will be limited to the areas shown on the special use permit map and in accordance with the mosquito management plan

This Compatibility Determination may be rescinded at any time based on future Fish and Wildlife Service Policy determinations or upon review of scientific studies of the effects of Bti on the environment or non-target organisms.

Justification

Due to the historic or current presence of endemic/enzootic viral diseases in New Jersey, and the species of mosquitoes present on the refuge, it is necessary to annually monitor and sometimes even treat mosquito populations on the refuge. As noted above, predators that feed on mosquito or midge larvae, or adult mosquitoes, are not considered specialists and will often vary their prey base depending on availability. Therefore we expect only minimal impact to species that prey on mosquito/midge larvae or mosquito adults.

Based on the stipulations above, allowing mosquito monitoring and control within the Wallkill River refuge will not materially interfere with or detract from the mission of the refuge system or the purposes for which the refuge was established. This compatibility determination will allow the refuge to protect human and animal health while not materially impacting refuge purposes #1, #2 beyond the reductions in larval mosquito and midge populations during documented periods of high mosquito populations. Refuge purpose #3 will also not be materially impacted as Bti is not known to be harmful to water quality. Refuge purposes #4 and #5 would likely see limited benefit from this activity as West Nile Virus is a threat to migratory birds and people and a reduction in the spread of this disease would benefit both refuge purposes.

Project Leader


(Signature)

1/27/09
(Date)

Concurrence

Regional Chief


(Signature)

1/29/2009
(Date)

Mandatory 10-year re-evaluation date

Jan. 29, 2019
(Date)

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Compatibility Determination

Use

Research Conducted by Non-Service Personnel

Refuge Name

Wallkill River National Wildlife Refuge

Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

Refuge Purposes

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to conserve and enhance populations of fish, wildlife, and plants within the refuge, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

“the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions....” 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986)

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” 16 U.S.C. 742f(a)(4) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services.” 16 U.S.C. 742f (b)(1) (Fish and Wildlife Act of 1956)

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

National Wildlife Refuge System Mission

The mission of the National Wildlife 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.”

Description of Use

(a) What is the use? Is it a priority public use? The use is research conducted by non-Service personnel. Research conducted by non-Service personnel is not 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).

(b) Where will the use be conducted? The location of the research will vary depending on the individual research project that is being conducted. The entire refuge is 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, or may span more than one refuge or include lands outside the refuge. The research location will be limited to those areas of the refuge that are necessary to conduct the research project.

(c) When will the use be conducted? The timing of the research will depend entirely on the individual research project's approved design. Scientific research will 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. If a research project occurs during the refuge hunting season, special precautions will be required and enforced to ensure the researchers' health and safety.

(d) How will the use be conducted? The methods of the research will depend entirely on the individual research project that is conducted. The methods and study design 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 if it does not have an approved scientific method, if it negatively affects endangered species, migratory birds, grassland birds or wintering raptors, or if it compromises public health and safety.

(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 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. Research is also part of the refuge purpose #5.

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 is important to agencies of the Department of Interior; the U.S. Fish and Wildlife Service, the National Wildlife Refuge System, state fish and game agencies and other agencies that are responsible for managing natural resources.

The refuge will also consider research for other purposes that 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. These proposals must comply with the Service's governing laws, regulations and policies.

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.

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 on site visits. The refuge biologist spends an average of seven weeks a year working full time on research projects conducted by outside researchers and providing the support they need to conduct their work on a national wildlife refuge. At an hourly wage of approximately \$25 (for a GS 9/11), this adds up to about \$7,000 annually for resources spent on outside research. In addition, the refuge manager must meet with perspective researchers, coordinate research efforts and deal with any administrative requirements.

Biologist staff time to oversee non-USFWS research (.13 FTE)	\$7,000
Refuge Manager time (.02 FTE).....	\$1,500
Fuel and equipment to visit/monitor research efforts (20 trips)	\$400
Total	\$8,900

The financial and staff resources necessary to provide and administer this use at its current level and at the level described in the final CCP are now available and we expect them to be available in the future.

Anticipated Impacts of the Use

The Service encourages approved research to further the understanding of the natural resources. Research by other than Service personnel adds greatly to the information base for refuge managers to make proper decisions. Disturbance to wildlife and vegetation by researchers could occur through observation, mist-netting, banding, and accessing the study area by foot or vehicle. It is possible that direct mortality could result as a by-product of research activities. Mist-netting, for example, can cause stress, especially when birds are captured, banded and weighed. There have been occasional mortalities to these birds, namely when predators such as raccoons and cats reach the netted birds before researchers do.

Minimal impact will occur when research projects that are previously approved 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 an entire species, habitat or public use.

Public Review and Comment

As part of the CCP process for the Wallkill River National Wildlife Refuge, this compatibility determination underwent extensive public review, including a comment period of 66 days following the release of the draft CCP/EA.

Determination

☐ Use is not compatible

☒ Use is compatible, with the following stipulations

Stipulations Necessary to Ensure Compatibility

All researchers will be required to submit a detailed research proposal following Service Policy (FWS Refuge Manual Chapter 4 Section 6). The refuge must be given at least 45 days to review and decide whether to approve proposals before initiation of research. If collection of wildlife is involved, the refuge must be given 60 days to review and decide whether to approve the proposal. The Service cannot guarantee that it will review or approve proposals not submitted within these timeframes. Proposals will be prioritized and approved based on need, benefit, compatibility, and funding required.

Special use permits (SUPs) will be issued for all research conducted by non-Service personnel. The SUP will list all conditions that are necessary to ensure compatibility. The special use permits will also identify a schedule for periodic progress reports and the submittal of a final report or scientific paper. The regional refuge biologists, other Service divisions, and state agencies will be asked to review and comment on proposals.

All researchers will be required to obtain appropriate state and Federal permits.

Any research project may be terminated at any time for non-compliance with the conditions of the SUP, or modified, redesigned, relocated or terminated 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.

All work with endangered species will require the proper permits from Federal or state government.

Justification

The Service encourages approved research to further understanding of refuge natural resources. Research by non-Service personnel, guided by the stipulations listed above, adds greatly to the information base for refuge managers to make proper decisions. This use will contribute directly to refuge purpose #5 and will indirectly support refuge purposes #1, #2, #3 and #4. While some research activities may cause minimal disturbance to wildlife or result in the loss of specific individuals, this impact to refuge purpose #1 or #2 will be more than offset by the value of the research to managers and future generations. Research conducted by non-Service personnel will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established.

Project Leader Edna C. Hays 1/27/09
(Signature) (Date)

Concurrence

Regional Chief Anthony D. Leger 1/29/2009
(Signature) (Date)

Mandatory 10-year re-evaluation date Jan. 29, 2019
(Date)

Compatibility Determination

Use

Furbearer Management to Protect Trust Resources

Refuge Name

Wallkill River National Wildlife Refuge

Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands in the expansion area under the same authorities that have been used to acquire lands in the past.. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

Refuge Purposes

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to conserve and enhance populations of fish, wildlife, and plants within the refuge, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

“the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions....” 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986)

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” 16 U.S.C. 742f(a)(4) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services.” 16 U.S.C. 742f(b)(1) (Fish and Wildlife Act of 1956)

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

National Wildlife Refuge System Mission

The mission of the National Wildlife 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.”

Description of Use

(a) What is the use? Is it a priority public use? The use is furbearer management as an economic use. Furbearer management is employed on the refuge as a management tool, yet since the refuge could use state (New York and New Jersey) licensed trappers to carry out this activity, and trappers could keep the furs, this constitutes an economic use. Furbearer management is not 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).

(b) Where will the use be conducted? Furbearer management through trapping is an allowable practice in New York and New Jersey, and will be conducted only in locations where it will accomplish refuge goals and objectives. Refuge law enforcement will ensure that trappers on the refuge comply with refuge regulations and, to the extent possible, with state regulations. Designating trapping zones and limiting the number of trappers in each zone may help prevent conflicts between trappers. In addition, designating trapping zones will allow the refuge to either concentrate or reduce trapping management needs. Designating locations where specific trappers are permitted on the refuge will facilitate the enforcement of refuge and state regulations.

(c) When will the use be conducted? When possible, furbearer management will be conducted in accordance with the New York and New Jersey state seasons, yet as a refuge management tool this use may be conducted outside of state seasons. New York furbearer management seasons run generally from October through February, while New Jersey furbearer management seasons generally run from November through March.

(d) How will the use be conducted? Refuge-owned lands in New York and New Jersey will be open to furbearer management for the following species: beaver, muskrat, fox, coyote, coydog and woodchuck. The refuge will offer a special use permit (50 C.F.R. Sec. 31.16) to trappers selected to conduct this management activity.

Furbearer management on refuge-owned lands will be conducted according to New York and New Jersey state regulations and any applicable refuge regulations, which will be detailed in a special use permit. The refuge will generally only allow furbearer management during state seasons. The refuge manager reserves the authority to regulate the numbers of target species taken in any one location.

We can only authorize this use if we find that it is compatible and it contributes to the refuge purposes or the System mission (50 C.F.R. Sec. 29.1), if we find there is a surplus wildlife population needing control (50 C.F.R. Sections 31.1 and 31.2(f)) and if we issue a permit (50 C.F.R. Sec 31.16). The refuge will determine on an annual basis whether furbearer management is necessary to support its goals and objectives.

(e) Why is this use being proposed? This use is being proposed in part to eliminate or reduce damage to refuge resources caused by overabundant species such as muskrats, beavers, foxes, coyotes, and woodchucks. Muskrats feed primarily on aquatic plants. In marsh environments, their feeding and lodge construction can aid wetland managers in obtaining desired amounts of open water and vegetation. In some portions of their range, however, muskrats can become excessively abundant and actually destroy the aquatic vegetation upon which they and other wildlife are dependent (MDC 2004). Woodchucks can tunnel into and under structures, therefore causing damage to refuge resources and infrastructure. Damage from beaver induced flooding is also a problem on the refuge as well as on some adjacent private lands. Populations of breeding birds can be devastated by foxes or coyotes. A furbearer management program will be used as a tool to maintain habitat and keep the predator-to-prey balance.

Refuge trappers typically have a stake in proper habitat and wildlife conservation and protection of the ecological integrity of the refuge so they can continue trapping. Accordingly, they are valuable assets for the refuge manager in providing on-site reports concerning the fundamental status of habitat, wildlife, and refuge conditions.

As a management tool, trapping also embodies public utilization of a renewable natural resource. Furbearers are considered a renewable natural resource with cultural and economic values (Andelt et al 1999, Boggess et al. 1990 Northeast Furbearer Resources Technical Committee 1996, Payne 1980). Several human dimension studies have documented trapper profiles, cultural aspects of trapping, and the socioeconomic role of trapping in the United States (Andelt et al. 1999, Boggess et al. 1990, Daigle et al. 1998, Gentile 1987). In addition to protecting refuge habitats and species, a regulated trapping program on the refuge could also foster the appreciation of wildlife and nature, wildlife observation, environmental education, a greater understanding of ecological relationships, stewardship of natural resources, and inter-generational passage of the methodologies of renewable resource use. Trapping is an activity in which family members and friends often participate and share joint experiences that broaden appreciation of natural resources and ecological awareness (Daigle et al. 1998).

Availability of Resources

In most years, the need to utilize a trapping program is not expected to be needed. The financial resources necessary to provide and administer this use at its current level are now available, and we expect them to be available the future. A wildlife biologist will be required to evaluate furbearer activity and potential and current affects refuge resources. The biologist will also evaluate trapper data and compile trapping reports. An administrative assistant will process SUPs and enter trapping data into a database. A refuge law enforcement officer will be required to check refuge trappers and ensure compliance with state and refuge regulations.

We estimate below the annual costs associated with administering the furbearer management program on the refuge.

Refuge Biologist (GS 11) (recommendations, surveys, data analysis): 1 week/yr = \$2,000

Law Enforcement Officer (GS 9) (trapper compliance): 6 days = \$3,000

Administrative Assistant (GS 5) (office administration, permit issuance): 1 week/yr = \$900

Total = \$5,900

Anticipated Impacts of the Use

The impacts of furbearer management on the purposes of the refuge and mission of the Refuge System can be either direct or indirect, and may have negative, neutral, or positive impacts on refuge resources. Due to the management role of trapping on the refuge, which will involve the taking of limited individuals in specific areas, few impacts to populations are anticipated. In most years, we expect no trapping will be needed on the refuge.

Indirect impacts may include displacing migratory birds during the pair bonding/nesting season or the destruction of nests by trampling. We will attempt to mitigate these impacts by authorizing trapping outside the nesting/breeding season. Direct impacts may include the catch of target and non-target species that are predators on migratory birds or nests. Due to the temporal separation of trapping activities and breeding wildlife using the refuge, indirect impacts on those resources by trappers will be negligible. Trappers using the refuge in early March may disturb individual early nesting waterfowl on occasion, and cause their temporary displacement from specific, limited areas. Those impacts are occasional, temporary, and isolated to small geographic areas.

When considering impacts on refuge purposes, the impacts of the furbearer management program obviously include those on the furbearer populations themselves. Trapping harvests and removes individuals of the species. Yet state natural resources agencies indicate that, with exceptions, furbearer populations are stable or increasing. The anticipated direct impacts of trapping on wildlife will be a reduction of furbearer population in those areas where surplus furbearers exist. The removal of excess furbearers from those areas will maintain furbearer populations at levels compatible with the habitat and with refuge objectives, minimize furbearer damage to facilities and wildlife habitat, minimize competition with or interaction among wildlife populations and species that conflict with refuge objectives, and minimize threats of disease to wildlife and humans.

Non-target species, such as feral cats, stray dogs, raccoons, or opossum, could be taken through this trapping program. None of these species are federal listed, nor are they a species of concern. We may require trappers to check their traps daily or to use humane traps to mitigate impacts to non-target species. Traps will be set specifically around areas of targeted species activity to reduce the risk of taking species other than targeted species. The experience of the trappers and the selection of the appropriate trap size will also reduce non-target captures (Northeast Furbearer Resources Technical Committee 1996, Boggess et. al 1990).

A national program operated under the guidance of the Fur Resources Technical Subcommittee of the International Association of Fish and Wildlife Agencies (IAFWA 1998) systematically improves the welfare of animals in trapping through trap testing and the development of “Best Management Practices (BMPs) for Trapping Furbearers in the United States.” The refuge will cooperate with and contribute to the development and implementation of those BMPs by practicing an integrated, comprehensive approach to furbearer management, wherever and whenever possible.

Public Review and Comment

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft CCP/EA for Wallkill River National Wildlife Refuge.

Determination

☐ Use is not compatible

☒ Use is compatible, with the following stipulations

Stipulations Necessary to Ensure Compatibility

We will provide any necessary guidance to trappers on proper trapping techniques to avoid incidental take as much as possible.

Adequate controls exist in the form of state laws to safeguard refuge furbearer populations. To ensure a safe, humane, and sound trapping program, the following special permit conditions will be required:

- Permittees must comply with all conditions outlined on the reverse side of the standard Fish and Wildlife Service Trapping Permit, Exhibit 1 in Chapter 7, Section 15 of the Refuge Manual (U.S. Fish and Wildlife Service 1985).
- Permittees must comply with all applicable state regulations. Trapping units will conform to state borders.
- Permittees must trap only their own units. One helper is allowed. The helper must also be listed on the permit and have all applicable state licenses. The helper may trap the unit without the permittee only if prior approval is granted to the permittee by the refuge manager.
- Fur animals authorized to be taken on the refuge may be taken only with traps permitted under state regulations. Traps shall be set where traps or trapped furbearers are not visible from public highways, overlooks, or other visitor facilities.
- Permittees must visit and inspect each of the traps in their trap line at least once every 24 hours. Traps may not be checked between one hour after sunset and one-half hour before sunrise of the following day.

- Permittees may cut small trees or brush on the refuge for use only as trap stakes. Cutting is prohibited along public roads and trails or near visitor facilities.
- Permittees must release non-target species that are uninjured immediately and report the species and number to the refuge manager or designee within 24 hours. Permittees must turn over to the refuge manager or designee within 24 hours non-target species injured or killed through trapping activities.
- Boats may not be used as a part of trapping activities unless specified as a part of a special use permit.
- Ingress to and egress from assigned trapping units assigned shall be only by routes of travel approved by the refuge manager.
- Permittees shall, no later than 10 days after the last day of the refuge trapping season, submit to the refuge manager a trapping report on which the number of each species of animals taken on the refuge is correctly stated. Refuge staff will provide each permittee a blank report card for this purpose.
- The Fish and Wildlife Service assumes no responsibility in case of theft of equipment or of trapped animals.

Justification

Furbearer management through trapping on the refuge is a useful tool for maintaining the balance between furbearers and habitat. As stated in the Anticipated Impacts section, populations of trapped animals will not be reduced beyond a local scale. High populations of predators can decrease the nesting success of ground-nesting migratory birds, thus compromising one purpose of the refuge. Some furbearer populations can also create problems for refuge structures. Furbearer populations, with local exceptions, are stable or increasing on refuge lands. When implemented with stipulations listed above, the furbearer management program on the refuge will not have any appreciable negative impacts on furbearer populations, and the use will be conducted to support refuge management goals. Furbearer management will support healthy refuge habitats and contribute directly to refuge purposes #1 and #2. The use will indirectly support refuge purpose #3. It will not impact refuge purpose #4 or #5. Any individual loss of animals, which would negatively impact refuge purpose #2 will be more than offset by the benefits of accomplishing refuge purposes #1 and #2.

Project Leader Edna O'Hara 1/27/09
(Signature) (Date)

Concurrence

Regional Chief Anthony J. Leary 1/29/2009
(Signature) (Date)

Mandatory 10-year re-evaluation date

Jan. 29, 2019
(Date)

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Compatibility Determination

Use

Dog Walking on the Liberty Loop Nature Trail

Refuge Name

Wallkill River National Wildlife Refuge

Establishing and Acquisition Authority

Wallkill River National Wildlife Refuge was first designated administratively by the Service in a decision document on March 9, 1990. Congress later enacted Public Law 101-593, 104 Stat. 2955 on November 16, 1990, to confirm its establishment by special legislation. The Service has acquired lands for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could also be acquired under several other legislative authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

Refuge Purposes

(1) to preserve and enhance the refuge lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations; (2) to conserve and enhance populations of fish, wildlife, and plants within the refuge, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds; (3) to protect and enhance the water quality of aquatic habitats within the refuge; (4) to fulfill international treaty obligations of the United States with respect to fish and wildlife and their habitats; and (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation. 104 Stat. 2955, dated Nov. 16, 1990.

“the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions....” 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986)

“for the development, advancement, management, conservation, and protection of fish and wildlife resources....” 16 U.S.C. 742f(a)(4) “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services.” 16 U.S.C. 742f(b)(1) (Fish and Wildlife Act of 1956)

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

National Wildlife Refuge System Mission

The mission of the National Wildlife 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.”

Description of Use

(a) What is the use? Is it a priority public use? The use is dog walking. Dog walking is not a priority public use of 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).

(b) Where will the use be conducted? Dog walking will be permitted on the Liberty Loop Nature Trail only (see map B-7). The 2.5-mile Liberty Loop Nature Trail coincides with 1.5 miles of the Appalachian Trail (AT). Dog walking has always been permitted on the AT where it passes through the refuge, but previously has not been permitted on the rest of the Liberty Loop Nature Trail. The trail system at Liberty Loop is located atop low habitat value dike perimeter trail outlining the Liberty Loop impoundments. Refuge staff uses these dikes as maintenance roads for the impoundments. With only a 6-foot leash, dogs will not be able to access any sensitive areas or disturb birds or other species except on the dike, where fewer interactions are likely to occur.

(c) When will the use be conducted? Dog walking will be allowed throughout the entire year.

(d) How will the use be conducted? Dog walkers will be allowed to walk their dogs only when the dog is attached to a 6-foot (or less) lead and the dog walker is in control of the lead. All dog walkers with properly leashed dogs are restricted to the Liberty Loop Nature Trail at all times. Dog owners will be required to pick up after their dogs.

(e) Why is this use being proposed? A portion of the Liberty Loop Nature Trail runs concurrent with a portion of the Appalachian Trail (AT). The AT enters the refuge at the Liberty Loop Nature Trail and follows the Liberty Loop Nature Trail for about 1.5 miles. The AT then continues along Oil City Road to where it crosses the Wallkill River, continues northwest on State Line Road, then onto Carnegie Street where it reenters the forest. The AT is a part of America's cultural legacy and the trail is a cultural resource of national significance. The Wallkill River refuge is the only refuge through which the AT runs, and the trail provides an excellent opportunity to educate hikers about the refuge and the National Wildlife Refuge System.

The Appalachian Trail allows dog walking along almost all of its 2,100-mile length, except in some wilderness and backcountry areas. Many people hike the entire AT, or large parts of it, with their dogs. Local residents and other refuge visitors who are not through hikers have historically parked at the Liberty Loop Nature Trail parking lot to walk their dogs on the AT. Since the AT does not connect directly to the refuge parking lot, dog walkers who park at the refuge parking lot have been forced to walk on Oil City Road to access the AT. This poses a public safety hazard as this portion of Oil City Road is a straightaway with no shoulder. Due to the nature of the road, parking on the side of the road to access the AT would also pose a public safety hazard. Another issue is that the AT runs concurrent with the Liberty Loop Nature Trail for only about 1.5 miles, after which the refuge trail continues in a loop for about another mile and the AT heads off the refuge to the southeast. Dog walkers have historically been forced to backtrack 1.5 miles on the AT rather than completing the loop trail by walking half that distance to the parking lot. This final CCP permits dog walking on the entire Liberty Loop Nature Trail to avoid confusion and to facilitate appreciation for the AT as a cultural resource.

Availability of Resources

Except for changing signs explaining the new regulations, no additional costs will be involved. Monitoring of the site for compliance will continue, but will not require additional resources beyond those already necessary to patrol the area for compliance with current regulations relating to dog walking and other activities at Liberty Loop. The financial and staff resources necessary to provide and administer this use at its current level and at the level described in the final CCP are now available and we expect them to be available in the future.

Anticipated Impacts of the Use

Because the Liberty Loop Nature Trail follows a dike system with limited habitat value, the potential impacts to wildlife and their habitats are minimal.

The presence of dogs may flush incubating birds from nests (Yalden and Yalden 1990), disrupt breeding displays (Baydack 1986), disrupt foraging activity in shorebirds (Hoopes 1993), and disturb roosting activity in ducks (Keller 1991). Many of these authors indicated that people with dogs on a leash and loose dogs provoked the most pronounced disturbance reactions from their study animals. The greatest stress reaction results from unanticipated disturbance. Animals show greater flight response to humans moving unpredictably than to humans following a distinct path (Gabrielsen and Smith 1995). Despite thousands of years of domestication, dogs still maintain instincts to hunt and chase. The appropriate stimulus can trigger those instincts. Dogs that are unleashed or not under the control of their owners may disturb or threaten the lives of some wildlife. In effect, off-leash dogs increase the radius of human recreational influence or disturbance beyond what it will be in the absence of a dog.

The role of dogs in wildlife diseases is poorly understood. However, dogs host endo- and ecto-parasites, and can contract diseases from or transmit diseases to wild animals. In addition, dog waste is known to transmit diseases that may threaten the health of some wildlife and other domesticated animals. Domestic dogs potentially can introduce various diseases and transport parasites into wildlife habitats (Sime 1999).

Public Review and Comment

This compatibility determination was made available for public review and comment for 66 days as an appendix to the draft Comprehensive Conservation Plan for Wallkill River National Wildlife Refuge.

Determination

☐ Use is not compatible

☒ Use is compatible, with the following stipulations

Stipulations Necessary to Ensure Compatibility

Only leashed dogs will be allowed on the refuge. The leash will be no more than six feet long. Dog walkers will be required to maintain control of their animal while on the refuge, thereby reducing the potential and severity of impacts to wildlife.

- Dog walkers must pick up after their dog(s) and remove the feces from the refuge.
- Agency and public awareness will be increased through interpretive/educational materials about responsible pet ownership in the context of wildlife disturbance during all outdoor recreational pursuits. Information will also address the potential role of domestic dogs in disease transmission to wildlife and vice versa in educational materials; information should include endo- and ecto-parasites.
- Refuge staff and volunteers will monitor uses to ensure compatibility, refine user estimates, and evaluate compliance. Potential conflicts between user groups will also be evaluated.
- If a high number of reports of negative dog-wildlife interactions on the Liberty Loop Nature Trail are reported, the refuge will reassess the use.
- If a high number of off-leash incidents are documented, we may consider eliminating dog walking from the refuge altogether.

Restricting dog walking to the established trail will reduce the potential disturbance of wildlife.

Justification

We predict the stipulations (listed above) will negate or minimize any dog-related wildlife impacts as discussed in the potential impacts section. Dogs will be under the direct control of their owners at all times while on the refuge. This should minimize any potential impacts that could result from the use. We will require all dogs to be on leashes of 6 feet or less, which would prevent dogs from interacting with wildlife in the impoundment areas. The trail system at Liberty Loop is located atop low habitat value dike/road perimeter trail outlining the Liberty Loop impoundments. With only a 6-foot leash, dogs will not be able to access any sensitive areas or disturb birds or other species except on the dike, where fewer interactions are likely to occur. To date, no negative dog-wildlife interactions have been reported from the sections of the AT where dogs are allowed.

Dog walking will add to the number of people partaking in wildlife observation, contributing to refuge purpose #5. As a result of the stipulations imposed, this use is expected to result in only minimal impacts to refuge purposes #2 and #4. The impacts will be limited to the low quality habitat atop the Liberty Loop Nature Trail only. The use is not expected to have any impact on refuge purposes #1 or #3. Limiting leashed dog walking to the Liberty Loop Nature Trail will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established.

Project Leader Edmund O. Hargis 1/27/09
(Signature) (Date)

Concurrence

Regional Chief Anthony D. Leger 1/29/2009
(Signature) (Date)

Mandatory 10-year re-evaluation date Jan. 29, 2019
(Date)

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Appendix C

Mao Lin/USFWS



Exemplary tussock-sedge bog turtle habitat.

Wilderness Review

- Introduction
- Documentation of Wilderness Inventory
- Inventory Criteria
- Inventory Conclusions

Introduction

The purpose of a wilderness review is to identify and recommend to Congress the lands and waters of the National Wildlife Refuge System that merit inclusion in the National Wilderness Preservation System (NWPS). Wilderness reviews are required elements of CCPs, are conducted in accordance with the refuge planning process outlined in the Fish and Wildlife Service Manual (602 FW 1 and 3), and include compliance with the National Environmental Policy Act (NEPA) and regulations on public involvement.

Wilderness Study Areas (WSAs) are areas that meet the criteria for wilderness identified in the Wilderness Act. Section 2(c) of the act gives the following definition:

“A wilderness, in contrast with those areas where man and his works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions, and which: (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological or other features of scientific, educational, scenic, or historical value.”

The wilderness review process has three phases: inventory, study and recommendation.

- In the inventory phase, we identify lands and waters that meet the minimum criteria for wilderness.
- In the study phase, we evaluate a range of management alternatives to determine whether a WSA is suitable for wilderness designation or management under an alternative set of goals and objectives that do not involve wilderness designation.
- In the recommendation phase, we forward in a wilderness study report the suitable recommendations from the Director through the Secretary and the President to Congress. We prepare that report after our Regional Director has signed the record of decision for the final CCP.

We manage any areas recommended for designation to maintain their wilderness character in accordance with the management goals, objectives and strategies in the final CCP, until Congress makes a decision or we amend the CCP to modify or remove the wilderness proposal.

Documentation of Wilderness Inventory

The purposes of the wilderness inventory phase are

- to identify areas of System lands and waters with wilderness character and establish those areas as WSAs;
- to identify areas of Refuge System lands and waters that do not qualify as WSAs; and
- to document the inventory findings for the planning record.

Inventory Criteria

Introduction

The wilderness inventory is a broad look at each planning area (Wilderness Inventory Area [WIA]) to identify WSAs. A WSA is an area of undeveloped federal land that retains its primeval character and influence, without permanent improvements or human habitation, and further, meets the minimum criteria for wilderness as identified in section 2(c) of the Wilderness Act. Only federal lands owned in fee are eligible to be considered WSAs and recommended further for wilderness designation and inclusion in the NWPS.

Minimum Wilderness Criteria

A WSA is required to be a roadless area or an island of any size, meet the size criteria, appear natural, and provide for solitude or primitive recreation.

Roadless—Roadless refers to the absence of improved roads suitable and maintained for public travel by means of motorized vehicles primarily intended for highway use. A route maintained solely by the passage of vehicles does not constitute a road.

The following factors were the primary considerations in evaluating the roadless criteria.

- A. The area does not contain improved roads suitable and maintained for public travel by means of motorized vehicles primarily intended for highway use.
- B. The area is an island, or contains an island that does not have improved roads suitable and maintained for public travel by means of motorized vehicles primarily intended for highway use.
- C. The area is in federal fee title ownership.

Size—The size criteria can be satisfied if an area has at least 5,000 acres of contiguous, roadless, public land, or is sufficiently large that its preservation and use in an unimpaired condition is practicable.

The following factors were the primary considerations in evaluating the size criteria.

- D. An area of more than 5,000 contiguous acres. State and private lands are not included in making this acreage determination.
- E. 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.
- F. 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.
- G. An area of less than 5,000 contiguous 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.

Naturalness—The Wilderness Act, section 2(c) defines wilderness as an area that “generally appears to have been affected primarily by the forces of nature with the imprint of human 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. In evaluating the naturalness criteria, we also consider significant hazards caused by humans, such as the presence of unexploded ordnance from military activity and the physical impacts of refuge management facilities and activities. 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. We considered the cumulative effects of those factors, in conjunction with the size of the land base and its physiographic and vegetative characteristics in our evaluation of naturalness.

The following factors were the primary considerations in evaluating naturalness.

- H. The area appears to have been affected primarily by the forces of nature with the imprint of human work substantially unnoticeable.
- I. The area may include some human impacts provided they are substantially unnoticeable in the unit as a whole.
- J. The presence of unexploded ordnance from military activity or the existence of other significant hazards caused by humans.
- K. The presence of physical impacts of refuge management facilities and activities.

Solitude or Primitive and Unconfined Recreation.—A WSA must provide outstanding opportunities for solitude or primitive and unconfined recreation. The area does not have to possess outstanding opportunities for both elements, 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 elements are not well defined by the Wilderness Act, but can be expected to occur together in most cases. 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.

The following factors were the primary considerations in evaluating outstanding opportunities for solitude or primitive unconfined recreation.

- L. The area offers the opportunity to avoid the sights, sounds and evidence of other people. A visitor to the area should be able to feel alone or isolated.
- M. The area offers non-motorized, dispersed outdoor recreation activities that are compatible and do not require developed facilities or mechanical transport.

Supplemental Values.— The Wilderness Act states that an area of wilderness may contain ecological, geological, or other features of scientific, educational, scenic or historical value. Supplemental values of the area are optional, but the degree to which their presence enhances the area's suitability for wilderness designation should be considered. The evaluation should be based on an assessment of the estimated abundance or importance of each of the features.

Inventory Conclusions

Evaluation of the Roadless Requirement

Paved, state- or county-owned roads almost entirely outline the Wallkill River refuge (see map C-1, below). Only small sections of the northern and southeastern edges of the refuge are unbounded by roads.

In addition, the linear orientation of the refuge (9 miles long by an average of 1 mile wide) limits its practicable management as a wilderness. A number of maintained roads bisect the refuge, further limiting its roadless areas and interrupting any given area with a number of unimpaired acres. Three roads completely bisect the refuge in an east-west direction; two additional roads cross about half of the refuge. Another seven roads border the refuge for a half-mile or more. The greatest distance between any two of those roads is 3.5 miles. Any point on the refuge lies within at least 0.75 miles of a road. Two of the roads are state highways traveled by thousands of cars per day. Many of the other roads are county highways with large volumes of traffic as well.

In addition to the paved roads, a number of gravel and dirt roads interrupt the refuge landscape. Although none of them receives much traffic, they make it impracticable to manage areas of the refuge as wilderness. Also running through the center of the refuge is a raised, abandoned railroad bed, about half of which is a right-of-way for a gas pipeline. The railroad bed interrupts any areas in unimpaired condition, and further fragments any wilderness character of the refuge. A refuge visitor would always be within a half mile of one of those unpaved roads or railroad beds. There are no islands associated with the Wallkill River.

Evaluation of the Size Requirement

The Service now owns 5,106 acres in the 7,500-acre refuge acquisition boundary. That minimally qualifies for the size criterion of a WSA. However, several inholdings would affect our ability to manage for wilderness. A few hundred acres within the current acquisition boundary are ineligible for purchase by the Service because permanent easements require their maintenance as agricultural land. Finally, the refuge lacks a large, core area; instead, it stretches along a river valley.

Evaluation of the Naturalness Requirement

Almost all the lands of the Wallkill River refuge are reclaimed agricultural lands bisected by a host of transportation corridors (railroad beds, agricultural roads, and logging roads) clearly visible on the landscape. Drained wetlands and irrigated fields have altered the natural hydrology of the land. Little remains of the region's historic bottomland hardwood forest and white cedar swamps. Managed grasslands, old fields, young woodlands, and middle-aged mixed forests dominate the landscape.

Throughout the refuge, the human imprint on the landscape is ubiquitous and easily recognizable. Foundations and home sites are commonplace, as are non-native species such as privet, daffodils, and Japanese barberry. Stone walls and old barbed wire fences traverse the landscape.

The area around the refuge is a mix of farmland and residential and commercial development. More than 5,000 people live within a quarter-mile of the refuge. Shopping centers, gas stations and restaurants border the refuge, as do a rock quarry and a soil mining operation.

No history exists of military use or unexploded ordnance on the refuge. Except for the occasional cellar hole, few other manmade hazards exist.

The management activities on the refuge have a moderate impact on its landscape. The refuge headquarters, maintenance facilities and structures affect an area of about 50 acres, separated into five sites. Additional refuge structures affect another five sites. The refuge also manages 335 acres of moist soil management units, which would be excluded from wilderness consideration because of the intense management activities required to maintain this habitat type.

Various forms of noise pollution, such as airplanes bound for one of New York City's four major airports, automobile traffic on one of the nearby roads, the traffic of canoes and kayaks on the Wallkill River, the chorus of lawnmowers in suburban areas, and farm tractors haying fields, make finding solitude on the refuge a challenge.

Although visitors occasionally can find solitude at a sandstone outcrop southwest of Kelly Road, nowhere on the refuge can they find "challenge and risk, self-reliance, and adventure," especially in comparison with the wilder areas of the Catskills and Adirondacks only a few hours away.

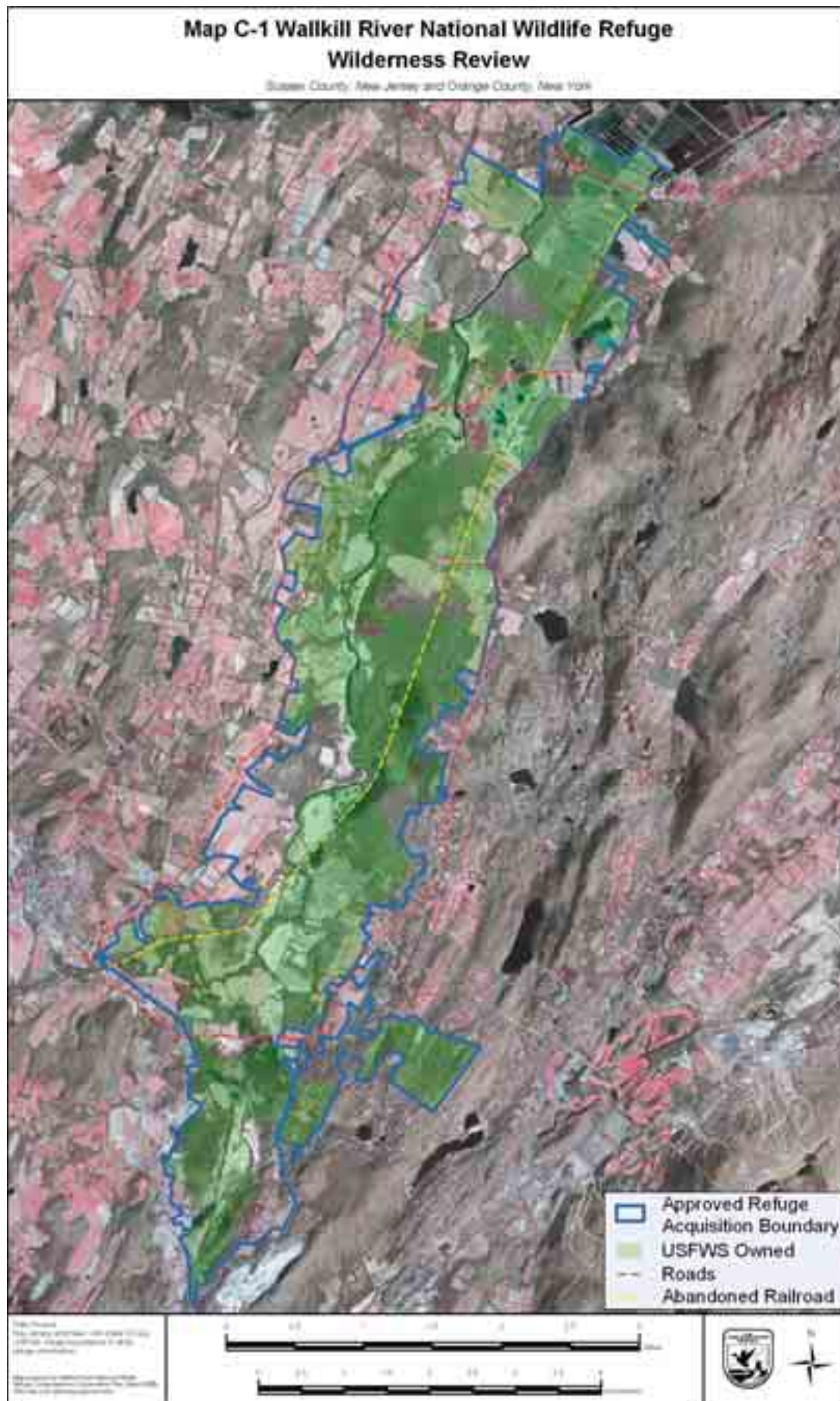
Furthermore, we close any area on the refuge that could provide a fleeting sense of solitude for all public activities except hunting. During the hunting season, those areas certainly would not meet the naturalness criteria. No supplemental values at the Wallkill River refuge require consideration for this wilderness review.

Conclusion

Based on the inventory above, we do not recommend any WSAs or the further evaluation of wilderness potential on the refuge. Although the 5,106-acre refuge meets the minimum size criteria, the shape of the refuge is linear, and its land is fragmented by maintained roads, defunct railroad beds, and a host of other corridors. Furthermore, in our opinion, the refuge lands do not meet the naturalness criteria, nor do they provide outstanding opportunities for solitude, primitive or unconfined recreation. Although 9 miles of the undeveloped Wallkill River runs through the middle of the refuge and offers scenic supplemental values, that is not enough to warrant the status of a WSA.

If we purchase from willing sellers the six privately owned tracts totaling more than 100 acres in the area around Kelly Road, they could create a contiguous land base and an opportunity for restoration, thus triggering an additional wilderness review in the future. However, that purchase is not a viable management consideration at this time.

Although the refuge shares part of its boundary with protected lands that contain the Appalachian Trail, no lands are contiguous with other federal-agency-owned lands now under review for wilderness.



Appendix D

USFWS



A view of the Wallkill River at one of its broader sections.

Wild and Scenic River Review

■ Introduction

■ Phase I—Wild and Scenic River Inventory

Introduction

The Wild and Scenic Rivers Act, (Pub. L. 90-543 as amended: 16 U.S.C. 1271-1287) (the act) establishes a method for providing federal protection for certain free-flowing rivers and preserving them and their immediate environments for the use and enjoyment of present and future generations. The function of this wild and scenic river review is to inventory and study the river, river segments and their immediate environments within the acquisition boundary of the Wallkill River National Wildlife Refuge (refuge) to determine whether they merit inclusion in the National Wild and Scenic River System (NWSRS).

Section 5(d)(1) of the act states in part:

“In all planning for the use and development of water and related land resources, consideration shall be given by all federal agencies involved to potential national wild, scenic and recreational river areas, and all river basin and project plan reports submitted to the Congress shall consider and discuss any such potential. The Secretary of the Interior and the Secretary of Agriculture shall make specific studies and investigations to determine which additional wild, scenic and recreational river areas within the United States shall be evaluated in planning reports by all federal agencies as potential alternative uses of the water and related land resources involved.”

Wild and scenic river considerations are a required element of comprehensive conservation plans, and are conducted in accordance with the refuge planning process outlined in 602 FW 1 and 3, including public involvement and National Environmental Policy Act compliance.

As part of the review process in section 5(d)(1), we are required to include all river segments that are within the planning area and listed in the Nationwide Rivers Inventory (NRI). The NRI is maintained by the National Park Service (NPS), and lists more than 3,400 free-flowing river segments in the United States that are believed to possess one or more “outstandingly remarkable” natural or cultural values judged to be of more than local or regional significance. The NRI lists a 14-mile reach of the Wallkill River from Hamburg, New Jersey, to Merritts Island, New York. A 9-mile portion of the Wallkill River from the southern refuge boundary downstream to the northern refuge boundary is within the 14-mile reach in the NRI, and is included in this Wild and Scenic River Review.

When the potential eligibility of a river or river segment is determined through the Wild and Scenic River Inventory process, its status is forwarded to the National Park Service for inclusion in the NRI. We will forward the results of this inventory to the NPS.

The review process has three phases: inventory, study and recommendation. In the inventory phase, we determine if any of the river or river segments within the planning area are eligible for NWSRS designation. We then determine the potential classification of eligible river segments as wild, scenic, or recreational (table D.1). To be eligible for wild and scenic river designation, a river or river segment is required to be free flowing and possess at least one outstanding remarkable value (ORV). The act identifies an ORV as recreational, geologic, fish, wildlife, historic, cultural, or other similar value. The river eligibility and classifications assigned during this inventory stage are tentative, and would be subject to further consideration during the study phase. Final determinations would be incorporated into the Comprehensive River Management Plan for any river/river segment receiving eventual designation as a component of the NWSRS.

In the study phase, we conduct a suitability study to determine if the river or river segments that were found eligible are suitable for designation to the NWSRS. The Act identifies the factors that will be considered and documented in determining the suitability of a river or river segment for inclusion in the NWSRS. Section 4(a) of the Act states that the study will include:

“maps and illustrations, ...; the characteristics which do or do not make the area a worthy addition to the system; the current status of landownership and use in the area; the reasonably foreseeable potential uses of the land and water which would be enhanced, foreclosed, or curtailed if the area were included in the national wild and scenic rivers system; the federal agency ... by which it is proposed the area, should it be added to the system, be administered; the extent to which it is proposed that such administration, including the costs thereof, be shared by state and local agencies; and the estimated cost to the United States of acquiring necessary lands and interests in land and of administering the area, should it be added to the system...”

The study area covers each river or river segment and its immediate environment. The immediate environment is an area extending the length of the river or river segment being studied and extending in width one-quarter mile from each bank of the river.

The recommendation phase consists of forwarding the wild and scenic river study report from the Director through the Secretary and the President to Congress. The report is prepared after the record of decision for the final CCP has been signed. The river or river segments recommended for NWSRS designation are managed to maintain their character in accordance with management goals, objectives, and strategies outlined in the final CCP until Congress makes a favorable legislative determination or the CCP is amended to modify or remove the wild and scenic river proposal.

This review is limited to the inventory phase only. Due to previous personnel commitments, neither the Service nor the affected states or partners were prepared to provide the appropriate involvement that would be needed to move the results of the inventory phase of this review to the study and recommendation phases. The Interdisciplinary Study Team (IDT) decided that it would be appropriate to inventory only those rivers and river segments that flow within the boundaries of the Wallkill River refuge, because the portion of the river within the boundary is a small segment of the entire river, and there is no break in their character at the refuge boundary. We believe that the rivers that we inventoried in this review should all be studied in total and with the full participation and involvement of our federal, state, local and nongovernmental partners.

The Interdisciplinary Study Team

The Interdisciplinary Study Team, composed of local, state and federal partners, met at the refuge on February 27, 2007 to determine if any of the river or river segments within the planning area were eligible for NWSRS designation and tentatively classify each eligible river or river segment as wild, scenic, or recreational. That process required combining site knowledge with existing land status maps, photographs, and available information on land use to determine if any of the refuge riverine systems were eligible for NWSRS designation. Public and stakeholder involvement provided additional information on the planning area's river resource values, and guidance on alternative river conservation and management approaches. The river eligibility and classifications that we assigned during the inventory phase are tentative.

The IDT members are listed below.

Edward Henry, Refuge Manager, Wallkill River NWR
Beth Goldstein, Planning Team Leader, USFWS
Rich Osborn, Green Acres, New Jersey Department of Environmental Protection
Nathanial Sajdak, Wallkill River Watershed Management Group
Donna T aylor, Sussex County Farmland Preservation and Conservation

Phase I—Wild and Scenic River Inventory

Introduction

The function of the wild and scenic river inventory is to identify rivers or segments of rivers and their immediate environment within the planning area that meet the minimum criteria for wild and scenic river

eligibility under the Act. The wild and scenic river inventory area considers all river or river segments within the planning area and their immediate environments. The immediate environment is the area extending the length of the river or river segment being studied and extending in width of one-quarter mile from each bank of the river. The immediate environment is not to exceed 320 acres per river mile. Those rivers or river segments that meet the minimum eligibility criteria are tentatively classified as wild, scenic, or recreational.

Minimum Wild and Scenic River Criteria

To be eligible for designation as a wild and scenic river, a river or river segment and its immediate environment is required to possess at least one ORV and be free flowing.

Outstanding Remarkable Values

Section 1(b) of the Act identifies the ORVs in the following manner:

“It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations.”

The following ORV definitions were taken from the December 1999 joint U.S. Forest Service and National Park Service technical report titled “The Wild and Scenic River Study Process.” That technical report was prepared for the interagency Wild and Scenic Rivers Coordinating Council. As stated in the report:

The following eligibility criteria are offered to foster greater consistency within the federal river-administering agencies. They are intended to set minimum thresholds to establish ORVs and are illustrative but not all-inclusive. If utilized in an agency’s planning process, these criteria may be modified to make them more meaningful in the area of comparison, and additional criteria may be included.

Scenery: *The landscape elements of landform, vegetation, water, color and related factors result in notable or exemplary visual features and/or attractions. Scenery and visual attractions may be highly diverse over the majority of the river or river segment.*

Recreation: *Recreational opportunities are, or have the potential to be, popular enough to attract visitors from throughout or beyond the region of comparison or are unique or rare within the region.*

Interpretive opportunities may be exceptional and attract, or have the potential to attract, visitors from outside the region of comparison.

The river may provide, or have the potential to provide, settings for national or regional usage or competitive events.

Geology: *The river or the area within the river corridor contains one or more example of a geologic feature, process or phenomenon that is unique or rare within the region of comparison.*

Fish: *Fish values may be judged on the relative merits of fish populations, habitat, or a combination of these river-related conditions.*

Populations: *The river is nationally or regionally an important producer of resident and/or anadromous fish species. Of particular significance is the presence of wild stocks and/or federal or state listed (or candidate) threatened, endangered or sensitive species. Diversity of species is an important consideration and could, in itself, lead to a determination of “outstandingly remarkable.”*

Habitat: *The river provides exceptionally high quality habitat for fish species indigenous to the region of comparison. Of particular significance is habitat for wild stocks and/or federal or state listed (or candidate) threatened, endangered or sensitive species. Diversity of habitats is an important consideration and could, in itself, lead to a determination of “outstandingly remarkable.”*

Wildlife: *Wildlife values may be judged on the relative merits of either terrestrial or aquatic wildlife populations or habitat or a combination of these conditions.*

Populations: *The river, or area within the river corridor, contains nationally or regionally important populations of indigenous wildlife species. Of particular significance are species considered to be unique, and/or populations of federal or state listed (or candidate) threatened endangered or sensitive species. Diversity of species is an important consideration and could, in itself, lead to a determination of “outstandingly remarkable.”*

Habitat: *The river, or area within the river corridor, provides exceptionally high quality habitat for wildlife of national or regional significance, and/or may provide unique habitat or a critical link in habitat conditions for federal or state listed (or candidate) threatened, endangered or sensitive species. Contiguous habitat conditions are such that the biological needs of the species are met. Diversity of habitats is an important consideration and could, in itself, lead to a determination of “outstandingly remarkable.”*

Prehistory: *The river, or area within the river corridor, contains a site(s) where there is evidence of occupation or use by Native Americans. Sites must have unique or rare characteristics or exceptional human interest value(s). Sites may have national or regional importance for interpreting prehistory; may be rare and represent an area where a culture or cultural period was first identified and described; may have been used concurrently by two or more cultural groups; and/or may have been used by cultural groups for rare sacred purposes. Many such sites are listed on the National Register of Historic Places, which is administered by the NPS.*

History: *The river or area within the river corridor contains a site(s) or feature(s) associated with a significant event, an important person, or a cultural activity of the past that was rare or one-of-a-kind in the region. Many such sites are listed on the National Register of Historic Places. A historic site(s) and/or feature(s) is 50 years old or older in most cases.*

Other Values: *While no specific national evaluation guidelines have been developed for the “other similar values” category, assessments of additional river-related values consistent with the foregoing guidance may be developed — including, but not limited to, hydrology, paleontology and botany resources.*

Wild and Scenic River Classification

Section 2(b) of the Act defines the classifications of Wild and Scenic Rivers in the following manner:

Every wild, scenic or recreational river in its free-flowing condition, or upon restoration to this condition, shall be considered eligible for inclusion in the National Wild and Scenic Rivers System and, if included, shall be classified, designated, and administered as one of the following:

1) **Wild river areas** — *Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.*

2) **Scenic river areas** — *Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.*

3) **Recreational river areas** — *Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.*

Summary of the Wild and Scenic River Inventory Findings

The refuge encompasses approximately 9 miles of the Wallkill River. The 9-mile portion of the Wallkill River was considered for wild and scenic river eligibility during the inventory. For inventory purposes, the IDT evaluated the segment of the Wallkill River that lies within the refuge's currently approved acquisition boundary. The IDT members determined that the segment met the criteria for wild and scenic river eligibility. The river segment and its immediate environment were determined to be free flowing and possess at least one ORV. A description of each eligible river segment, its immediate environment, and the IDT inventory findings are summarized below. The IDT inventory findings are summarized in table D.2.

River Segment: Wallkill River (south refuge boundary downstream to the north boundary)

River Segment Length: 9 miles

Outstandingly Remarkable Values: Scenic, Recreation, Geology, Wildlife, Fish.

Tentative Classification: Scenic

The Wallkill River originates at the outlet of Lake Mohawk in Sparta Township. The river flows north through Sussex County, N.J., until it crosses into New York State, where it joins Rondout Creek near Rosendale, N.Y., and empties into the Hudson River at Kingston, N.Y. The Wallkill River is one of the few rivers in North America that flows north, and is free flowing throughout most of its length.

The Wallkill River National Wildlife Refuge is a riverine floodplain refuge, located within the Kittatinny Valley in the north central portion of the Wallkill River watershed. The refuge encompasses approximately 9 miles of the Wallkill River. The refuge bottomlands provide one of the few large areas of high quality waterfowl habitat remaining in northwest New Jersey.

The broad floodplains of the river as it passes through the refuge consist primarily of forested wetlands and wet meadows. The rolling topography of the area consists of oak-covered limestone ridges that parallel the river. At some locations, they come right to the river's edge. Wetlands and forests yield to open farmlands and grasslands at the higher elevations. The shoreline of the river consists of a variety of habitats, including red maple swamps, calcareous fens, wet meadows and old fields.

The Wallkill River bottomland is one of the few large, high-quality waterfowl habitats remaining in northwestern New Jersey. As a major watershed and wetland complex, the river provides migratory and nesting habitat for Atlantic Flyway black duck populations as well as wood duck, mallard, green-winged teal, common merganser, and Canada geese. More than 225 species of birds have been recorded on the refuge. Of those, 122 have been documented as breeding on the refuge. The refuge provides valuable habitat to migrant waterfowl, wintering raptors, grassland birds, and marsh birds. The refuge is also an important site for wading birds, shorebirds, shrubland-dependant birds, and forest interior songbirds. Great blue heron and green herons are perennial summer inhabitants in the refuge wetlands. The refuge also supports 19 species listed by the State of New Jersey as threatened or endangered.

Raptors are plentiful during fall migration as well, when sharp-shinned hawks, Cooper's hawks, and broad-winged hawks fill the sky on clear September days. Short-eared owls, northern harriers, and rough-legged hawks are found primarily during the winter.

Approximately 40 species of mammals inhabit the refuge. Important game and furbearer species include the opossum, raccoon, striped skunk, river otter, mink, red fox, gray fox, coyote, muskrat, beaver, eastern cottontail, and white-tailed deer.

The refuge is regionally important for providing habitat for bobcat and black bear. Those large mammals require the large, unfragmented habitat types on the refuge.

Butterflies and dragonflies are abundant along the river. The refuge supports one of the most diverse Odonate communities in the Northeast. The most significant of these include the first state occurrences of midland clubtail (*Gomphus fraternus*) and skillet clubtail (*G. ventricosus*).

The Wallkill River provides an excellent warm water fishery for largemouth bass, pickerel, perch, sunfish, and bullhead. Several of the streams that enter the river have native brook trout populations. The stocking of brown trout by the state stops near Hamburg, N.J., where the river bottom changes from primarily gravelly to silt-laden.

Recreational opportunities for fishing, hunting, hiking, and wildlife observation and photography are abundant. A segment of the Appalachian Trail runs through the refuge. The refuge has three nature trails. Fishing and canoe access is provided at the Wallkill River on Route 565 in Vernon Township. No parking is currently available at this site, but parking is available at the corner of Route 565 and Scenic Lakes Road, a 5-minute walk from the river.

Protective Management

When a river segment is determined to be eligible and given a preliminary classification, the outstandingly remarkable values shall be afforded adequate protection, subject to valid existing rights, and until the eligibility determination is superseded. Management activities and authorized uses shall not be allowed to adversely affect either the eligibility, or the tentative classification from a wild area to a scenic area or a scenic area to a recreational river area.

Public notification of the protective management will occur no later than the publication and release of this Comprehensive Conservation Plan. However, the Refuge Manager shall initiate protective management as soon as the eligibility is determined.

Specific management prescriptions for eligible river segments should provide protection in the following ways:

1. **Free-Flowing Values:** The free-flowing characteristics of the eligible river segments cannot be modified to allow stream impoundments, diversions, channelization and/or riprapping to the extent the Service is authorized under law.
2. **River Related Values:** Each segment shall be managed to protect identified outstandingly remarkable values and, to the extent practicable, such values shall be enhanced.
3. **Classification Impacts:** Management and development of the eligible river and its corridor cannot be modified, and is subject to valid existing rights to the degree that its eligibility or tentative classification would be affected.

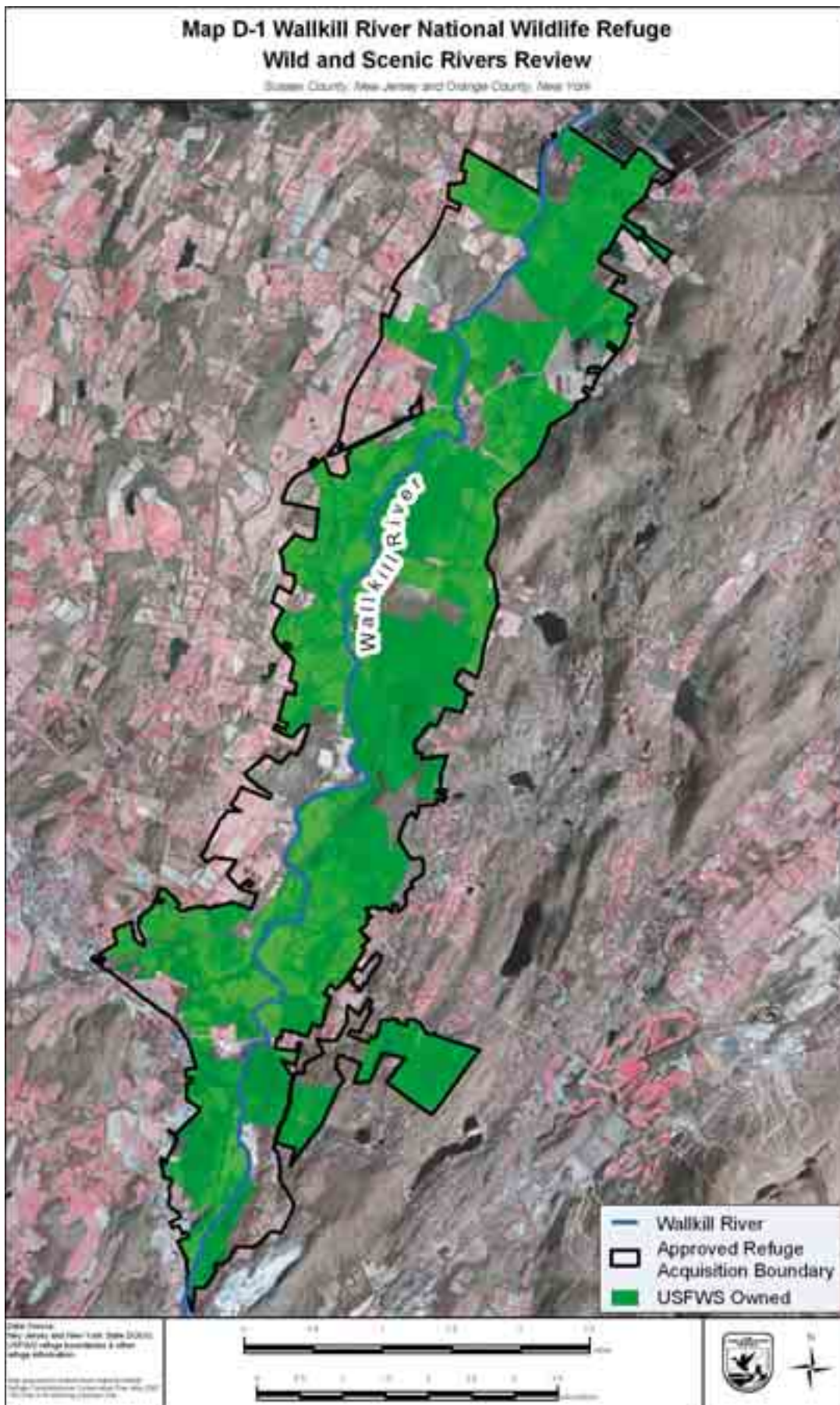


Table D.1. Classification Criteria for Wild, Scenic and Recreational River Area¹.

<i>Wild</i>	<i>Scenic</i>	<i>Recreational</i>
Water Resources Development		
Free of impoundment.	Free of impoundment.	Some existing impoundment or diversion. The existence of low dams, diversions, or other modifications of the waterway is acceptable, provided the waterway remains generally natural and riverine in appearance.
Shoreline Development		
Essentially primitive. Little or no evidence of human activity.	Largely primitive and undeveloped. No substantial evidence of human activity.	Some development. Substantial evidence of human activity.
The presence of a few inconspicuous structures, particularly those of historic or cultural value, is acceptable.	The presence of small communities or dispersed dwellings or farm structures is acceptable.	The presence of extensive residential development and a few commercial structures is acceptable.
A limited amount of domestic livestock grazing or hay production is acceptable. Little or no evidence of past timber harvest. No ongoing timber harvest.	The presence of grazing, hay production, or row crops is acceptable. Evidence of past or ongoing timber harvest is acceptable, provided the forest appears natural from the riverbank	Lands may have been developed for the full range of agricultural and forestry uses. May show evidence of past and ongoing timber harvest.
Accessibility		
Generally inaccessible except by trail.	Accessible in places by road.	Readily accessible by road or railroad.
No roads, railroads or other provision for vehicular travel within the river area. A few existing roads leading to the boundary of the river area is acceptable.	Roads may occasionally reach or bridge the river. The existence of short stretches of conspicuous or longer stretches of inconspicuous roads or rail-roads is acceptable.	The existence of parallel roads or railroads on one or both banks as well as bridge crossings and other river access points is acceptable.
Water Quality		
Meets or exceeds federal criteria or federally approved state standards for aesthetics, for propagation of fish and wildlife normally adapted to the habitat of the river, and for primary contact recreation (swimming), except where exceeded by natural conditions.	No criteria prescribed by the Act. The Federal Water Pollution Control Act Amendments of 1972 have made it a national goal that all waters of the United States be made fishable and swimmable. Therefore, rivers will not be precluded from scenic or recreational classification because of poor water quality at the time of their study, provided a water quality improvement plan exists or is being developed in compliance with applicable federal and state laws.	

¹ Table D.1 taken from: Diedrich, J., Thomas C. 1999. The Wild & Scenic River Study Process. U.S. Forest Service and National Park Service.

Table D.2. Eligible Rivers within the Wallkill River National Wildlife Refuge.

River Name	River Segment Description	Outstandingly Remarkable Values							Tentative Classification			FWS River Segment Length (Miles)*
		Scenery	Recreation	Geology	Fish	Wildlife	Cultural	Other Values	Wild	Scenic	Recreational	
Wallkill River	South refuge boundary to the North refuge Boundary	X	X	X	X	X				X		9.0

*Segment length is approximate.

Appendix E

USFWS



Wallkill River National Wildlife Refuge headquarters in Sussex, New Jersey

RONS and SAMMS

- **Refuge Operating Needs System (RONS) Databases**
- **Service Asset Maintenance Management System (SAMMS) Databases**

Refuge Operating Needs System (RONS) Databases

Table E.1. Proposed Tier 1 projects currently in the RONS database

<i>Project #</i>	<i>Project Title</i>	<i>Regional Rank</i>	<i>Station Rank</i>	<i>Budget Category</i>	<i>Year 1 Cost (\$1,000)</i>	<i>Recurring Cost (\$1,000)</i>	<i>FTEs</i>
97029	Provide Environmental Education and Interpretation for Refuge Visitors (Visitor Services Specialist)	5	3	People	\$63	\$63	1
1	Enhance Productivity of Refuge Grassland Restoration and Management Program (Maintenance Worker)	76	2	Habitat	\$65	\$60	1
98001	Restore and Manage Moist Soil Units for Migratory Birds and Bog Turtle	125	6	Habitat	\$216	\$0	
5	Evaluate Bird Response to Grassland Restoration and Management (Biologist)	136	7	Wildlife	\$65	\$87	1
97010	Inventory Refuge Biodiversity to Reduce Invasive Plant Species	138	10	Habitat	\$67	\$25	
97018	Offer Visitor Services at Wallkill River NWR Office and Trail	200	19	People	\$137	\$3	
7	Inventory Forestlands, Develop Management Recommendations, and Conduct Timber Treatments	246	20	Habitat	\$54	\$0	
Totals					\$667	\$238	7

Table E.2. Proposed Tier 2 projects currently in the RONS database

<i>Project #</i>	<i>Project Title</i>	<i>Regional Rank</i>	<i>Station Rank</i>	<i>Budget Category</i>	<i>Year 1 Cost (\$1,000)</i>	<i>Recurring Cost (\$1,000)</i>	<i>FTEs</i>
97015	Survey Refuge Cultural Resources and Document Significant Discoveries	315	99	People	\$117	\$0	
14	Refuge Boundary Survey and Posting	700	24	Habitat	\$50	\$0	
9	Enhance Bog Turtle Habitat and Monitor Populations	999	12	Habitat	\$37.5	\$35	0.5
97022	Improve Compliance with Federal Wildlife Protection Laws	999	8	People	\$40	\$71	1
97004	Restore Emergent Marshes	999	16	Habitat	\$340	\$13	
97008	Restore and Manage Shrublands	999	21	Habitat	\$32.5	\$30	0.5
97025	Improve Watershed Quality with Assistance to Municipalities and Landowners	999	99	Habitat	\$77	\$96	1
97028	Improve Environmental Education Through a Museum Property Program	999	99	People	\$32	\$4	
92020	Construct Timberdoodle Trail to Provide Access for Public Use	999	17	People	\$172	\$5	
8	Construct Comfort Station and Parking Area at Timberdoodle Trail	999	18	People	\$173	\$5	
2001	Improve Refuge Daily Operations	999	23	People	\$77	\$59	1
Totals					\$1,148	\$318	7

Table E.3. Proposed uncategorized projects currently in the RONS database

<i>Project #</i>	<i>Project Title</i>	<i>Regional Rank</i>	<i>Station Rank</i>	<i>Budget Category</i>	<i>Year 1 Cost (\$1,000)</i>	<i>Recurring Cost (\$1,000)</i>	<i>FTEs</i>
	Hire a private contractor to conduct mist net surveys for Indiana Bats on the Refuge				\$45	0	
	Hire a Private Lands Specialist to work with partners to create, restore or enhance regionally-significant ecological communities, focusing on landowners with large acreages or farmlands.				\$63	\$63	1
	Restore natural flow or re-create or enhance wetland conditions where feasible and where it does not impact other priority projects				\$300	\$10	
	Construct a barrier-free access to a fishing platform at Bassett's Bridge for disabled anglers.				\$65	0	
	Provide parking at Scenic Lakes Road for fishing access on Wallkill River at County Route 565.				\$185	0	
	Construct a photography blind on the Liberty Loop Nature Trail.				\$25	0	
	Extend Wood Duck Nature Trail approximately 0.75 miles with a footbridge over the Wallkill River.				\$165	0	
	Build barrier-free boardwalk access from the Bassett's Bridge parking area to the fishing platform/canoe access				\$65	0	

Service Asset Maintenance Management System (SAMMS) Database

Table E.4. Proposed projects currently backlogged in the SAMMS database.

<i>Project #</i>	<i>SAMMS #</i>	<i>Project Title</i>	<i>Refuge Rank</i>	<i>Regional Rank</i>	<i>Cost Estimate (\$1,000)</i>
02006	2121234	Replace Dagmar Dale Water Control Structure	1	9	73
00012	104305	Replace Quarters 6	3	67	300
99012	99104300	Rehabilitate Bassett's Bridge Fishing and Canoe Access	4	74	64
98003	98123777	Rehabilitate South Segment of Wood Duck Nature Trail	7	127	158
00010	104297	CN Scenic Lakes Road Parking (920)	8	19	26
98511	98104279	Rehabilitate Roadway at 6 Oil City Road	9	149	47
04007	4134266	Replace Pelican Pump	10	177	84
00018	104314	Rehabilitate Quarters 5	11	216	95
04001	4134049	Rehabilitate Lehigh and New England Railroad Bed (Tract 46)	15	268	138
04002	4134174	Rehabilitate Lehigh and New England Railroad Bed (Tract 15c)	17	800	40
01012	1114667	Replace 1998 4x4 Ford Explorer	18	83	34
03003	3126334	Remove Friend Barn	21	800	99
01011	1114691	Replace 2001 Dakota Pickup Truck	23	106	29
01013	1114674	Replace 2000 Law Enforcement Vehicle	24	110	33
01007	1114138	Replace 1985 International Stake Truck	25	111	78
04003	4134241	Remove Residence at 140 Owens Station Road	27	800	40
03001	3126332	Remove Bicsak Barn	28	800	54
98507	98104276	Rehabilitate Quarters 4 Exterior, Kitchen, and Bath	29	800	43
01016	1114702	Replace Wildland Fire Engine	30	154	79
01004	1113915	Rehabilitate barn by demolishing Barn on Tract 57	31	800	110
01008	1114142	Replace 1982 International Dump Truck	33	158	159
97009	97104290	Rehabilitate Wood Duck Trail for ADA Compliance	37	800	42

Table E.4. Proposed projects currently backlogged in the SAMMS database.

<i>Project #</i>	<i>SAMMS #</i>	<i>Project Title</i>	<i>Refuge Rank</i>	<i>Regional Rank</i>	<i>Cost Estimate (\$1,000)</i>
98529	98104294	Replace Environmental Education Center Gate	38	800	19
00006	104301	CN Rehabilitate Owens Station Access Road (.5 mi.)	39	500	71
97020	97	Rehabilitate Timberdoodle Trail	40	800	191
00008	0	Rehabilitate Parking Area for Timberdoodle Trail	41	999	186
00020	104308	CN Widen, Repave Roadway (.2 mi.) and Public Use Parking Area	42	42	432
00005	104271	Rehabilitate Farm Road	43	800	220
98538	98104289	Rehabilitate Tract 88 Farm Road	44	800	59
01017	1114802	Replace John Deere 6300 Farm Tractor	48	139	64
98528	98130598	PE Center Rd & 3 Parking lots (Rte 102, 905, 910, 920; 0.2 mi)	49	46	21
98528	98132965	CE Center Rd & 3 Parking Lots (Rte 102, 905, 910, 920; .2 mi)	50	999	21
00004	104267	Replace 1975 Cub Cadet Riding Mower	51	52	11
97010	97104299	CN Liberty Loop Nature Trail Parking (905)	53	500	71
98528	98104298	CN EE Center Rd & Parking (Rte 102, 910; 0.2 mi)	54	46	126
97005	97104273	Replace 2005 Farm Tractor	55	888	53
93001	93104293	Rehabilitate Environmental Ed Center HVAC and Interior	99	800	265

Appendix F

USFWS

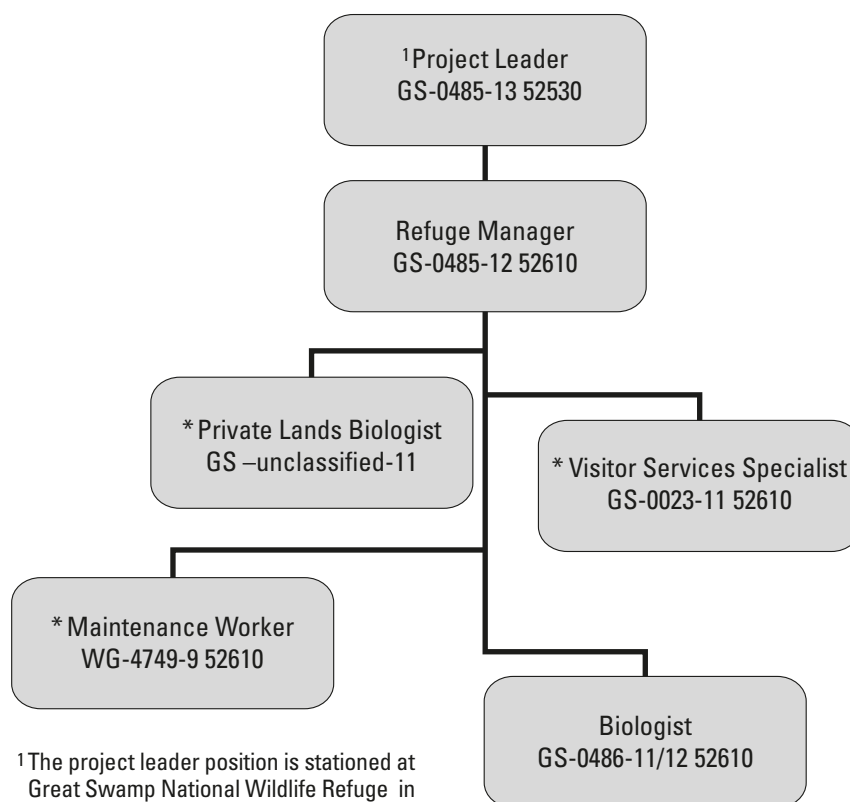


Green frog

Staffing Chart

■ Final CCP Staffing Chart

U.S. Fish and Wildlife Service Wallkill River National Wildlife Refuge Final CCP Staffing Chart



¹ The project leader position is stationed at Great Swamp National Wildlife Refuge in Basking Ridge, NJ

* New/Expanded Staff

GS levels indicate full performance level

Note 1: Other than the Project Leader position, this organizational chart does not include staff from Great Swamp refuge, which administers the Wallkill River refuge.

Note 2: This organizational chart does not include staff from the Shawangunk Grasslands refuge, which is an unstaffed refuge administered by the Wallkill River refuge.

Note 3: This organizational chart does not include two staff persons from the Fire Program, who are located at the Wallkill River refuge headquarters, and supervised by Wallkill's manager.

Appendix G

USFWS



Grassland habitat bordered by a forest benefits foraging raptors as well as a variety of mammal species.

Land Protection Plan

- Introduction and Purpose
- Project Description
- Status of Resources to be Protected
- Continuing Partnership Effort
- Action and Objectives
- Protection Options
- Acquisition Methods
- Coordination
- Socioeconomic and Cultural Impacts
- Attachment 1. Parcel Maps and Table
- Attachment 2. Threshold Standards and Other Considerations

Introduction and Purpose

This Land Protection Plan (LPP) identifies the expanded boundary for the Wallkill River National Wildlife Refuge (refuge). Working with others, we delineated four focus areas totaling 9,550 acres of biologically significant land in the Wallkill River watershed. We plan to acquire land in all four of those focus areas. Of their total acres, we recommend acquiring 4,763 acres in fee title and 4,585 acres in conservation easements. We plan to acquire the remainder, 197 acres, in either fee or easement.

The purposes of this LPP are to

- provide landowners and the public with an outline of U.S. Fish and Wildlife Service (Service, we, our) policies, priorities, and protection methods for land in the project area,
- assist landowners in determining whether their property lies within the expanded boundary, and
- inform landowners about our long-standing policy of acquiring land only from willing sellers. [We will not buy any lands or easements if the owners are not interested in selling.]

The LPP presents the methods the Service and interested landowners can use to accomplish their objectives for wildlife habitat within the expanded refuge boundary. The maps (attachment G.1) show the original approved refuge acquisition boundary, the expansion area, and the land parcels in that expansion area. A corresponding table identifies each parcel, its tax map number, acreage, and our priority and recommended option for acquiring and protecting its habitat. Attachment G.2 relates our LPP for the refuge to the threshold standards under consideration by the Service Director for determining the strategic growth of the National Wildlife Refuge System (Refuge System).

Project Description

Original Approved Refuge Acquisition Boundary

The Wallkill River refuge lies approximately 60 miles northwest of New York City, in the northeastern section of Sussex County, N.J. (Wantage, Hardyston, and Vernon), and in southern Orange County, N.Y. (Minisink and Warwick). The refuge protects a combination of wetland and upland habitats supporting migratory birds, federal- and state-listed species, and regionally significant wildlife and plant communities in the Wallkill River watershed. A rolling valley between the Kittatinny Ridge and the Hudson Highlands contains the Wallkill River valley habitat complex: headwater wetland complexes of riverine habitats, ponds, emergent marshes, fens, scrub-shrub wetlands, wooded swamps, mixed hardwood upland forests, grasslands and farmlands. The Service designated the Wallkill River a priority wetland under the Emergency Wetland Resources Act of 1986.

Migratory bird habitat is among the primary reasons for creating the refuge and guiding its management. Signature species include black ducks, wood ducks, woodcocks, and a number of raptors. The refuge falls in the Northern Highlands Zone identified in the New Jersey State Wildlife Action Plan (WAP). In the grassland habitats, the state would like to increase and stabilize the populations of three state-listed endangered species and five state-listed threatened species. The state-listed endangered species include the northern harrier, vesper sparrow and arogos skipper. The state-listed threatened species include the bobolink, grasshopper sparrow and savannah sparrow.

Refuges can be established by Congress through a special legislation, by the President through an executive order, or by the Director of the Service through an administrative decision document. Wallkill River refuge was first established by the Director in an administrative decision document on March 9, 1990. Congress later

enacted Public Law No. 101-593, 104 Stat. 2955 on November 16, 1990 to confirm the establishment of the 7,500-acre refuge along a 9-mile stretch of the Wallkill River by special legislation. For the expansion of the refuge's land acquisition boundary the Director will issue a new administrative decision document.

The Wallkill River refuge was established with the following purposes:

- (1) to preserve and enhance the refuge's lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations;
- (2) to conserve and enhance populations of fish, wildlife, and plants in the refuge, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds;
- (3) to protect and enhance the water quality of aquatic habitats in the refuge;
- (4) to fulfill international treaty obligation of the United States with respect to fish and wildlife and their habitats; and
- (5) to provide opportunities for compatible scientific research, environmental education, and fish and wildlife-oriented recreation (104 Stat. 2955).

The law that created the refuge established a boundary of approximately 7,500 acres. That acreage came from a compilation of tax maps from the townships of Wantage, Vernon, and Hardyston in Sussex County, N.J., and the townships of Minisink and Warwick in Orange County, N.Y. Subsequent GIS calculations and surveys of the tax parcels that make up the refuge estimate the original defined boundary at closer to 6,700 acres. Our acquisition of parcels categorically excluded from NEPA compliance has expanded that boundary by approximately 350 acres, bringing the current boundary to approximately 7,100 acres. Most of that is located in Sussex County, N.J.; 147 acres is located in Orange County, N.Y.

Once the acquisition boundary is established, the Service can acquire lands under a variety of statutory authorities; see Refuge Manual 3 RM 1.3. To date, the Service has acquired 5,106 acres for the Wallkill River refuge under the following authorities:

1. Emergency Wetlands Resources Act of 1986 [16 U.S.C. 3901(b)]
2. Migratory Bird Conservation Act [16 U.S.C. 715d]
3. Fish and Wildlife Act of 1956 [16 U.S.C. 742f(a)(4)]

There are still 93 ownerships unacquired by the Service within the original approved refuge acquisition boundary. An ownership is one or more parcels of land owned by a legal entity. Of those 93 ownerships, New Jersey Green Acres, the County Farmland Protection Program, or the local municipality permanently protects 17. That leaves only 76 ownerships, or approximately 1,200 acres, without permanent protection in the original approved refuge acquisition boundary. We are now negotiating to protect eight additional ownerships, or about 250 acres. Table G.1 summarizes recent refuge acquisitions.

Acquisitions for the Refuge have been funded with monies from the Land and Water Conservation Fund and from the Migratory Bird Conservation Commission. As of Fiscal Year 2006, 3,672 acres within the original approved acquisition boundary were purchased with funds from the Land and Water Conservation Fund and 1,305 acres were purchased with funds from the Migratory Bird Conservation Commission. About 130 acres were donated.

Table G.1. Recent land acquisition activity at Wallkill River refuge.

<i>State</i>	<i>County</i>	<i>Date</i>	<i>Tract</i>	<i>Acres</i>	<i>Amount</i>
NJ	SUSSEX	02/04/2005	53	45.17	\$158,095.00
NJ	SUSSEX	02/28/2005	41	31.85	36,627.50
NJ	SUSSEX	02/28/2005	41a	13.50	15,525.00
NJ	SUSSEX	02/28/2005	41R	0.00	0.00
NJ	SUSSEX	01/04/2006	15v	83.30	674,612.10
NJ	SUSSEX	01/04/2006	15w	0.13	387.90
NJ	SUSSEX	03/10/2006	45	111.66	0.00
NJ	SUSSEX	03/10/2006	45a	10.72	0.00
NJ	SUSSEX	03/10/2006	45-I	7.27	0.00
NJ	SUSSEX	06/13/2007	125	36.73	130,000.00
NJ	SUSSEX	06/15/2007	29	21.49	\$190,000.00

Please note that many of the refuge's boundaries do not line up precisely with the local geographic or ecological boundaries. In addition, numerous landowners whose property adjoins the original approved refuge acquisition boundary have approached the Service as willing sellers.

Expansion Area

The expansion area contains some of the region's most important wetland areas, which provide high-quality stopover habitat for migratory waterfowl. The Atlantic Coast Joint Venture of the North American Waterfowl Management Plan identifies the Wallkill River as a priority area. The expansion area also includes migratory songbird and raptor breeding habitat and endangered species habitat for three federal-listed species and dozens of state-listed species. The Bog Turtle Recovery Plan (USFWS 2001) identifies the Wallkill River watershed as a recovery subunit. We will protect up to five bog turtle population analysis sites (PAS) in the expansion area in New Jersey, and thus, work toward achieving one recovery objective for the Wallkill River subunit (USFWS 2001). Bog turtles are a keystone species for wetland habitats that are important for a diverse assemblage of species, including state-listed invertebrates, birds, amphibians and reptiles. The expansion area also provides potential habitat for two federal-listed endangered species, the dwarf wedgemussel and the Indiana bat.

The expansion area will also protect a viable biological corridor between the Appalachian Ridge and Valley province and the Hudson Highlands, and will protect the water quality of the upper Wallkill River watershed. In conjunction with our partners, we will protect both valley and upland habitats and, with coordinated management, will support many of the goals in the New Jersey WAP and endangered species recovery plans.

Status of Resources to be Protected

Wildlife and Habitat Resources

In 1994, the New Jersey Division of Fish, Game and Wildlife Endangered and Nongame Species Program (ENSP) adopted a landscape-level approach to rare species protection. Its goal is to protect New Jersey's biological diversity by maintaining or enhancing rare wildlife populations in healthy, functioning ecosystems. It identifies five landscape regions.

The Wallkill River refuge lies in the Skylands Region, which includes all or part of Hunterdon, Somerset, Warren, Morris, Passaic and Sussex counties. Using an extensive database that combines rare species location information with land cover data, the ENSP has identified and mapped areas of critical habitat for rare species (state- and federal-listed threatened or endangered species) in each landscape region, and ranks those critical areas by priority. A GIS database provides conservation partners with baseline information to help in prioritizing habitat protection, acquiring open space, and planning land management. That information was used in developing the New Jersey WAP, and in our Land Protection Plan.

The Skylands are dominated by about 625,000 acres of contiguous northern mixed-hardwood forests on the mountaintops, and about 105,700 acres of hemlock ravines alongside mountain streams. The valleys that lie between the ridges contain about 225,500 acres of cultivated fields, grasslands and meadows. Wetlands total about 36,000 acres, and include limestone fens, floodplains, spring-fed wetlands, and the largest concentration of glacial lakes in New Jersey.

The New Jersey WAP also identifies seven Priority Conservation Zones in the Skylands Region, delineated by the similarity of their habitat types. The expanded refuge lies in the conservation zone identified as the Kittatinny Valley. The valley lies in Sussex and Warren counties, between the Kittatinny Ridge and the northern extent of the Highlands Mountain ridges. That broad valley in the Ridge and Valley physiographic province contains fertile soils, and has a history of agricultural activity. Its grassland habitat includes natural grasslands, croplands, pastures, old farm fields, hedgerows, and wood lots. The valley also contains the headwaters and associated freshwater wetlands of the Paulins Kill, Pequest, and Wallkill rivers. Old farm ponds, limestone fens, wet meadows, and swamps dot the landscape. Although grasslands and open habitats dominate much of the valley, large parcels of forest also are scattered throughout the area. The upland forest and forested wetland habitats include stands of deciduous hardwood forest, scrubland and scrub-shrub wetland, vernal pool, and hardwood swamp dominated by red maples.

Kittatinny Valley habitats support 5 federal-listed endangered or threatened species, 13 state-listed endangered species, 16 state-listed threatened species, and 77 species of special concern or regional priority, in addition to 5 game species of regional priority and 3 nongame fish species now without state or regional status. The dwarf wedgemussel is federal-listed as endangered, and the bog turtle is federal-listed as threatened. The state-listed endangered species are the American bittern, northern goshawk, northern harrier, red-shouldered hawk, sedge wren, vesper sparrow, and blue-spotted salamander. The state-listed threatened species are the barred owl, black-crowned night-heron, bobolink, Cooper's hawk, grasshopper sparrow, long-eared owl, red-headed woodpecker, savannah sparrow, wood turtle, long-tailed salamander, eastern lamp mussel, triangle floater, and silver-bordered fritillary. Wildlife of special concern in the valley is colonial waterbirds, forest passerines, freshwater wetland birds, grassland birds, scrub-shrub birds, reptiles, amphibians, and mollusks.

Migratory colonial waterbirds, songbirds, raptors, freshwater wetland birds, and waterfowl funnel through the valley to take refuge in its forest and wetland habitats. Forests, forested wetlands, and vernal pools also provide habitat important for a diverse group of reptiles and amphibians, including eastern box turtles, spotted turtles, wood turtles, blue-spotted salamanders, Fowler's toads, Jefferson salamanders, long-tailed salamanders, marbled salamanders, and northern spring salamanders. Due to the proximity of known hibernacula, the forests of this zone likely provide summer foraging and roosting habitat for the federal-listed endangered Indiana bat. Bog turtles are found in the fens and wet meadows associated with valley pastures. The valley also contains one of the state's only two known wetland habitats for the Mitchell's satyr butterfly. The valley's grasslands are crucial for grassland birds and foraging raptors.

The biological resources in this valley landscape have the greatest need of protection. Most public lands already protected in the Skylands lie in the upper valley and ridge top zones around the Kittatinny Valley. The only significant expanse of permanently protected public land in the valley is the Wallkill River refuge. The refuge expansion provides us the opportunity to protect additional wildlife resources in the valley and connect it with the large sections of publicly protected forested lands around it. Although that promises to be a challenging undertaking in the rapidly developing northwest corner of New Jersey, adding those lands to the refuge will provide the region's only feasible, preserved corridor connecting the Kittatinny Ridge with the Hudson Highlands.

Most of the resources that need protection in the valley are associated with wetlands. The federal-listed threatened bog turtle, for example, depends on the specific hydrologic regime of continual, clean water springs, making the protection of associated water sources a critical component of land protection. Habitat for the dwarf wedgemussel, which is not known to inhabit the expanded refuge, depends on clean water. The primary actions in the New Jersey WAP emphasize the importance of protecting wetlands in the Kittatinny Valley by including the following:

- “Identify critical wetland habitats and assess their suitability for bog turtles or other wetland dependent species. Develop and implement strategies to restore, maintain or enhance populations and habitat, as appropriate. Actions can include landowner incentives to manage or protect habitat, fencing and grazing, maintaining protective buffers, eliminating invasive, non-native vegetation and controlling water levels in impoundments.”
- “Maintain connectivity between wetland habitats by identifying important corridors to maintain a system of large, connected wetland habitats. Target these areas for acquisition or work with public and private landowners to maintain the corridors.”
- “Work with the USFWS, NGOs and private landowners to protect and manage critical bog turtle sites on public and private lands in the Wallkill National Wildlife Refuge and Wallkill River Watershed.”
- “Continue to support the protection of the large wetland complex of the Wallkill National Wildlife Refuge, Wallkill River Watershed, White Lake, and Johnsonburg Preserve.”

Threats to the Resource

The loss, alteration, and fragmentation of habitat all pose the greatest threats to wildlife in the upper Wallkill River Valley and the Skylands Region. That loss of habitat results from development, which is occurring at a rapid rate in northern New Jersey. Fragmentation alters the habitat by breaking up large, contiguous blocks into smaller patches that are unsuitable for area-sensitive species. New roads fragment habitats and create barriers to animal movements between habitats. Preserving the large, contiguous blocks of habitat that remain in the Skylands and maintaining their connectivity are crucial for the long-term viability of populations of area-sensitive wildlife. The discontinuity of emergent and forested wetlands, along with the loss of other suitable corridors, may lead eventually to the genetic bottlenecking of both bog turtles and spotted turtles. The contamination and alteration of waterways and wetlands, in combination with increased human encroachment into those riparian areas, affect all wetland-dependent species and species groups.

Those threats are particularly common in the Kittatinny Valley, where low-lying areas are more conducive to development. Commuting from this area to New York City is now commonplace. Opportunities to protect large tracts of land and minimize habitat fragmentation steadily decline as suburban sprawl overtakes the rural, agricultural landscape. The proposed development of new malls, housing, and golf courses is continuous. The fragmentation and alteration of grasslands due to development, as well as agricultural practices and the reversion of fields and scrub-shrub habitats to forest, threaten grassland birds with specialized habitat needs and birds that depend on scrub-shrub or open field habitat. Deleterious invasive plants and groundwater degradation have altered the fens and wet meadows inhabited by bog turtles. Beavers, although generally considered beneficial, may cause local concern when their dams flood bog turtle habitat. Road mortality and illegal collection threaten bog and wood turtles, and over-collection has seriously reduced or possibly extirpated populations of the Mitchell's satyr butterfly. Dam construction and water quality degradation threaten

riverine habitats that support populations of mussels, nongame fish and native trout. Development continues to fragment the large forest parcels inhabited by area-sensitive species of raptors and passerines.

New Jersey's burgeoning population of white-tailed deer poses a significant threat to forest health and forest regeneration. Deer damage, coupled with human factors, has severely affected some of New Jersey's remaining public and private natural lands. High numbers of deer take refuge in residential areas or on public or private lands where hunting is not allowed. Their over-browsing can eliminate native shrub layers and damage breeding habitat for many species, particularly shrub-nesting birds. In addition, over-browsing can create an environment conducive for invasive plants germinating and crowding out native species, thereby eliminating rare plant communities.

The increased use of caves and mines for recreational activities poses a major threat to hibernating Indiana bats (a federal-listed threatened species) and other cave-dwelling bats, because it forces them to use crucial fat reserves needed to survive the winter. The refuge is known to support the bats' mature tree hibernacula. During hibernation, cave-dwelling bats are highly susceptible to large-scale mortality due to human disturbance and disease such as white nose syndrome.

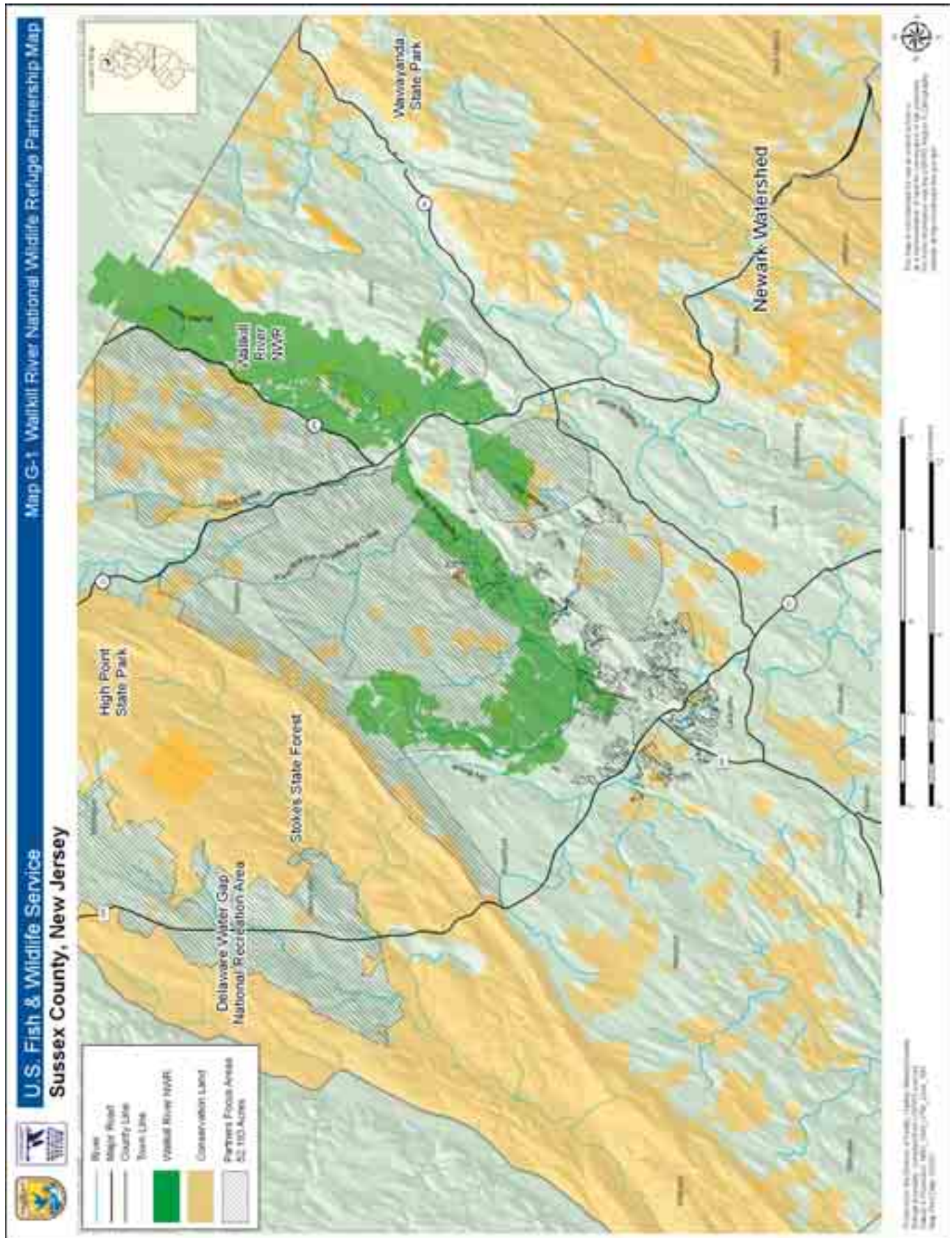
The recent passage of New Jersey's Highlands Water Protection and Planning Act (Highlands Act) will afford additional protection to areas that lie in the designated Preservation Area. In the short term, this will be accomplished in part through strict limitations on development in some areas. However, those strict limitations will put additional development pressure on areas that lie just outside the Preservation Area, such as the expanded refuge, which lies directly west of the Highlands protection area. Townships hosting the refuge, such as Hardyston and Wantage, are already feeling the displaced development from the Highlands Region.

Continuing Partnership Effort

The threats to the resource described above make preserving land in northwest New Jersey and southeast New York both crucial and challenging. As long-term real estate values increase due to the influx of people from the New York metropolitan area, the need to act quickly to preserve key parcels remaining in Sussex and Orange counties becomes more acute. For that reason, we recognize the need to collaborate with other conservation organizations in the region. In July 2005, the Service met with representatives from the State of New Jersey, The Nature Conservancy, the Trust for Public Land, New Jersey Audubon Society, New Jersey Conservation Foundation, The Land Conservancy of New Jersey, and municipal, county and state officials to discuss and define the role each agency could play in protecting wildlife habitat in the Kittatinny Valley. Each partner uses its agency's individual mission statement to focus its protection efforts. Taken together, those mission statements cover the protection of farmland, threatened and endangered species, scenic areas, grassland habitats, and open space that the local community identified as significant.

After each agency outlined its areas of protection interest, we identified more than 61,743 acres worthy of protection in the Kittatinny Valley and surrounding uplands (see map G-1). As mentioned above, the Service will focus on 9,550 acres, or 15 percent of the total area identified as worthy of protection. Those 9,550 acres, which are adjacent to the original approved refuge acquisition boundary and encompass this major tributary of the Wallkill River, are the most critical in maintaining the biological diversity, integrity and environmental health of the present refuge. Our partners will take the lead in protecting an additional 52,193 acres in the valley and surrounding uplands. Only with partners working to preserve the uplands and tributary valleys along the expansion area will the refuge be able to maximize the valley's potential to function as a viable ecosystem.

The New Jersey WAP specifically identifies the Wallkill River refuge as an area of conservation opportunity, with its ability to link the low-lying valley habitat with the upland forests already protected. Almost half of the acreage in the Skylands Region (625,000 acres) is upland forest. Only 8 percent (106,000 acres) is forested wetland, and 3 percent (36,000 acres) is emergent wetland. This land protection plan will help achieve the State's land protection goals. By expanding the refuge acquisition boundary, the Service will become a catalyst for land protection in the Kittatinny Valley. Expanding the refuge boundary will forge the way



toward protecting rare habitats in the Skylands Region, and will be crucial for the State in achieving its recommendation to protect more than 56,000 acres of forested wetlands and 7,000 acres of emergent wetlands in that region.

The expanded acquisition boundary will further the refuge purposes, by preserving and enhancing lands and waters in a manner that will conserve the natural diversity of fish, wildlife, plants, and their habitats for present and future generations. The wetlands along Beaver Run and Papakating Creek will allow the refuge to conserve and enhance fish and wildlife populations, including populations of black ducks and other waterfowl, raptors, passerines, and marsh and water birds. By re-establishing healthy forests and reducing erosion, sedimentation and non-point source pollution, we will be able to maintain and enhance habitats for migratory birds, fish, and state- and federal-listed species. Furthermore, adding trails, wildlife observation areas, fishing and hunting access points and lands, and interpretation and education will increase the opportunities for public, wildlife-dependent recreation. Without protection, those lands undoubtedly will no longer support fish and wildlife populations and, by default, will no longer support opportunities for compatible, wildlife-dependent recreation.

Action and Objectives

Authorities for Modifying the Refuge's Original Acquisition Boundary

We anticipate that the Service will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could also be acquired under several other statutory authorities, including but not limited to:

1. Refuge Recreation Act [16 U.S.C. 460K-1]
2. Endangered Species Act [16 U.S.C. 1534]
3. National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(b)]

We expect that land acquisition within the expansion area will be funded in a manner similar to land acquisition in the original refuge boundary.

Acquisition Area

The expansion area includes these four focus areas: Papakating Creek (7,079 acres), Beaver Run (849 acres), Wallkill Adjoining West (1,092 acres) and Wallkill Adjoining North (530 acres) depicted in the maps at the end of this document. Approximately 500 ownerships lie in the refuge expansion area.

The Papakating Creek Focus Area encompasses the entire Papakating Creek, which is about 15 miles long. It runs through three townships: Wantage, Frankford, and Hardyston. The focus area contains tremendous wetland resources, and offers a key corridor connecting preserved habitats on the Kittatinny Ridge and Pochuck Mountain. The wetlands in the Papakating Creek drainage area, however, have been degraded by poor agricultural practices, and are threatened by commercial and residential development. The Service is the one agency in the best position to preserve those wetlands and their associated habitats for the federal-listed threatened bog turtle, the federal-listed endangered Indiana bat, and for migratory birds, reptiles, mammals and endangered species. Protecting the uplands and wetlands around the creek will significantly improve the quality of water in the Wallkill River, as well as in the creek, thus providing improved habitat conditions for many of the species mentioned above. In addition, those wetland areas will directly promote the ideals expressed in the legislation founding the refuge.

The Beaver Run Focus Area encompasses part of the Beaver Run stream, a tributary of the Wallkill River. It nestles on the west side of route 23, about halfway between the boroughs of Hamburg and Sussex. This focus area contains at least one bog turtle site. Protecting this area would connect the refuge with a piece of state-protected land that has another bog turtle site.

The Wallkill Adjoining West Focus Area is bounded by the present refuge and route 284. Protecting its additional uplands and streams that drain into the Wallkill River will maintain the integrity of the current

refuge. This area also contains some historical bog turtle sites and the potential for additional Indiana bat roosting habitat.

The Wallkill Adjoining North Focus Area extends into New York. Protecting it will allow us to restore native grasslands or forested wetland habitats that would complement our moist soil management units at Liberty Marsh. This area would also allow for additional habitat protection along the Wallkill River and its associated wetland habitats. Together this would support the refuge's goals of improved water quality, aquatic habitats and wildlife dependent recreation.

We are not interested in acquiring developed land near villages or subdivisions. We are interested in protecting and restoring wildlife habitat. Therefore, we have excluded certain lands from the expansion area.

Land Cover/Land Use

Table G.2 summarizes the general types of land cover and land use in the expansion area. In general, the land is a mix of forested and non-forested wetlands, forested uplands, fallow fields, pasturelands, and a sprinkling of early successional habitats. Most of those lands, which are fragmented, could benefit from large-scale management.

Table G.2. Acreages by focus area.

<i>Land Cover Type</i>	<i>Adjoining North</i>	<i>Adjoining West</i>	<i>Papakating Creek</i>	<i>Beaver Run</i>	<i>Total:</i>
1-Grassland	401.90	7.30	120.68	2.24	532.12
2-Early Successional	70.30	277.60	1,147.46	102.19	1,597.55
3-Forested Wetland	3.52	23.65	677.54	47.20	751.91
4-Non-Forested Wetland	15.10	120.78	774.84	143.66	1,054.38
5-Forested Upland	10.20	142.03	1,472.22	243.89	1,868.34
6-Open Water	.86	7.38	67.20	12.38	87.82
7-Other	28.14	38.97	277	26.27	370.38
8-Cropland and Pastureland	0.00	474.24	2,541.90	271.64	3,287.78
Total	530.02	1,091.95	7,078.84	849.47	
Grand Total					9,550.28

Maps and Ownership Table

Attachment G.1 provides maps and a table listing all land parcels. Both the maps and the table were produced using the New Jersey Association of County Tax Boards on-line database. We provide this information to inform landowners of our interest in lands in that area.

A number keyed to the table identifies each parcel on the maps. That number appears in the first column as LPP number (LPP Number). The table provides the following information:

- Tax map, or “insert” number
- Block Number (from county tax map)
- Lot Number (from county tax map)
- Acreage of the parcel*

- Service priority for acquisition (the importance of the parcel to the project)
- Proposed method of acquisition or protection

*The acreage we derived from our GIS database may differ from the acreage on the county tax map.

Land Protection Priorities

All of the lands we include in the expansion area have significant resource values and high potential for ensuring habitat connectivity between the refuge and surrounding conservation lands. In general, the availability of land from willing sellers, and the availability of funding at that time will influence the actual order of land acquisition. However, as landowners offer us parcels, and as funds become available, we will base the priority for acquisition on several factors. We have assigned those lands one of the following four priority categories.

Priority 1: Priority 1 parcels contain most of the lands and habitats that meet the threshold for federal protection. Priority 1 lands mostly are located along County Route 565, along Beaver Run, or along the northern edge of the refuge. They are

- parcels that contain a significant amount of functioning undisturbed or relatively undisturbed wetlands of significant importance that support federal trust species (federal-listed species, migratory birds);
- parcels that are of significant importance to the Wallkill River watershed;
- parcels that border the Papakating Creek or Beaver Run;
- parcels at the northern tip of the refuge that would be prime candidates to enhance the waterfowl impoundments at Liberty Marsh;
- parcels that contain known bog turtle habitat or prime bog turtle habitat;
- parcels that have a significant value for migratory birds, with prime nesting and foraging habitats for federal- or state-listed species.

Priority 2: Priority 2 parcels are located throughout the expansion area, but tend to cluster around priority 1 lands or along the smaller tributaries of the Wallkill River or Papakating Creek, and contain wetlands associated with or hydrologically connected to priority 1 wetlands;

- areas of high potential for wetland restoration or enhancement not directly connected with the Liberty Marsh impoundment complex;
- currently functioning but moderately disturbed wetlands;
- parcels of moderate value to a variety of migratory bird species or of significant value to a limited number of migratory bird species;
- parcels that contain potentially significant habitat for endangered species found in close proximity to the refuge (dwarf wedgemussel and Indiana bat).

Priority 3: Most priority 3 parcels are on uplands in the area west of the refuge or in higher lands along the Papakating Creek, and contain

- undeveloped upland habitats associated with federal trust species;
- areas directly draining into or with significant ecological connections to a priority 1 wetland;
- undeveloped upland habitats associated with federal- and state-listed species habitats.

Priority 4: Priority 4 lands are scattered throughout the expansion area. Our intention is to minimize the need to acquire residences and buildings on these lands, while protecting and restoring habitat, so we will evaluate those parcels on a case-by-case basis:

- parcels adjacent to the refuge and important for current refuge management;
- areas that would create administrative efficiency and contribute to the ecological integrity of the current and expanded refuge boundaries.

With the above criteria in mind, we configured our boundaries for fee and easement areas. The Service reserves the right to be flexible with the detailed priority list above, because a number of factors also influence the priority of acquisition, including the availability of willing sellers and the availability of funding. In addition, the Service must be flexible in its methods and priorities of acquisition to meet the needs of individual landowners.

Protection Options

We will use the following options to implement this Land Protection Plan.

Option 1: management or acquisition by others

Option 2: less-than-fee acquisition by the Service

Option 3: fee acquisition by the Service

Service policy in acquiring land is to acquire only the minimum interest necessary to meet refuge goals and objectives, and acquire it only from willing sellers. Our proposal includes a combination of options 1, 2, and 3 above. We believe this approach offers a cost-effective way of providing the minimal level of protection needed to accomplish refuge objectives while also attempting to meet the needs of landowners.

Option 1. Management or Acquisition by Others

As we mention above, the Service and its partners identified more than 61,743 acres worthy of protection in the area of the Kittatinny Valley around the refuge and the surrounding uplands. The Service will focus its limited financial resources on 9,550 acres, or 15 percent of the total area identified as worthy of protection. Our partners will take the lead in protecting the remaining 52,193 acres in the Kittatinny Valley and surrounding uplands. The Service will work with such partners as the New Jersey Green Acres, The Nature Conservancy, New Jersey Audubon Society, Trust for Public Land, and local land trusts to support their land protection and management in the areas around our 9,550-acre expansion area. Only by working with partners to preserve the uplands and tributary valleys along the expansion area will the refuge be able to maximize the valley's potential to function as a viable ecosystem.

Option 2. Less-than-fee Acquisition

Under option 2, we will protect and manage land by purchasing only a partial interest, typically in the form of a conservation easement. This option leaves the parcel in private ownership, while allowing us control over the land use in a way that enables us to meet our goals for the parcel or that provides adequate protection for important adjoining parcels and habitats. The structure of such easements will provide permanent protection of existing wildlife habitats while also allowing habitat management or improvements and access to sensitive habitats, such as for endangered species or migratory birds. It will also allow for public use where appropriate. We will determine, on a case-by-case basis, and negotiate with each landowner, the extent of the rights we will be interested in buying. Those may vary, depending on the configuration and location of the parcel, the current extent of development, the nature of wildlife activities in the immediate vicinity, the needs of the landowner, and other considerations.

In general, any less-than-fee acquisition will maintain the land in its current configuration with no further subdivision. Easements are a property right, and typically are perpetual. If a landowner later sells the property, the easement continues as part of the title. Properties subject to easements generally remain on

the tax rolls, although the change in market value may reduce the assessment. The Service does not pay refuge revenue sharing on easement rights. Where we identify conservation easements, we will be interested primarily in purchasing development and some wildlife management rights. Easements are best when

- only minimal management of the resource is needed, but there is a desire to ensure the continuation of current undeveloped uses and to prevent fragmentation over the long-term and in places where the management objective is to allow vegetative succession;
- a landowner is interested in maintaining ownership of the land, does not want it to be further developed, and would like to realize the benefits of selling development rights;
- current land use regulations limit the potential for adverse management practices;
- the protection strategy calls for the creation and maintenance of a watershed protection area that can be accommodated with passive management; or
- only a portion of the parcel contains lands of interest to the Service.

The determination of value for purchasing a conservation easement involves an appraisal of the rights to be purchased, based on recent market conditions and structure in the area. “Acquisition Methods,” below, further describes the conditions and structure of easements.

Option 3. Fee Acquisition

Under Option 3, we will acquire parcels in fee title from willing sellers, thereby purchasing all rights of ownership. This option provides us the most flexibility in managing priority lands, and ensuring the protection in perpetuity of nationally significant trust resources.

Generally, the lands we will buy require more than passive management (e.g., controlling invasive species, mowing or prescribed burning, planting, or managing for the six priority public uses). We only propose fee acquisition when adequate land protection was not assured under other ownerships, active land management was required, or we determined the current landowner would be unwilling to sell a partial interest such as a conservation easement.

In some cases, it may become necessary in the future to convert a conservation easement to fee acquisition: for example, when an owner is interested in selling the remainder of interest in the land on which we have acquired an easement. We will evaluate that need on a case-by-case basis.

Acquisition Methods

We may use three methods of acquiring either a full or a partial interest in the parcels identified for Service acquisition: (1) purchase (e.g., complete title, or a partial interest like a conservation easement), (2) donations, and (3) exchanges.

Purchase

For most of the tracts in the boundary, the proposed method is listed as *Fee* or *Easement*; however, the method we ultimately use depends partly on the landowner’s wishes.

Fee purchase involves buying the parcel of land outright from a willing seller in fee title (all rights, complete ownership), as the availability of funding allows.

Easement purchase refers to the purchase of limited rights (less than fee) from an interested landowner. The landowner would retain ownership of the land, but would sell certain rights identified and agreed upon by both parties. The objectives and conditions of our proposed conservation easements would recognize lands for their importance to wildlife habitat or outdoor recreational activities, and any other qualities that recommend them for addition to the Refuge System.

Donation

We encourage donations in fee title or conservation easement in the approved areas. We are not aware currently of any formal opportunities to accept donations of parcels in our acquisition boundary.

Exchange

We have the authority to exchange land in Service ownership for other land that has greater habitat or wildlife value. Inherent in this concept is the requirement to get dollar-for-dollar value with, occasionally, an equalization payment. Exchanges are attractive because they usually do not increase federal land holdings or require purchase funds; however, they also may be very labor-intensive and take a long time to complete.

Service Land Acquisition Policy

Once a refuge acquisition boundary has been approved, we contact neighboring landowners to determine whether any are interested in selling. If a landowner expresses an interest and gives us permission, a real estate appraiser will appraise the property to determine its market value. Once an appraisal has been approved, we can present an offer for the landowner's consideration.

Our long-established policy is to work with willing sellers as funds become available. We will continue to operate under that policy. Appraisals conducted by Service or contract appraisers must meet federal as well as professional appraisal standards. Federal law requires us to purchase properties at their market value, which typically is based on comparable sales of similar types of properties.

We based the acquisition boundary on the biological importance of key habitats. That gives the Service the approval to negotiate with landowners that may be interested or may become interested in selling their land in the future. With those internal approvals in place, the Service can react more quickly as important lands become available. Lands in that boundary do not become part of the refuge unless their owners sell or donate them to the Service.

A landowner may choose to sell land to the Service in fee simple and retain the right to occupy an existing residence. That is a "life use reservation." It applies during the seller's lifetime, but can also apply for a specific number of years. At the time we acquire the parcel, we would discount from the appraised value of the buildings and land the value of the term of the reservation. The occupant would be responsible for the upkeep on the reserved premises. We would own the land, and pay revenue sharing to the appropriate taxing authority.

In rare circumstances, at the request of a seller, we can use "friendly condemnation." Although the Service has a long-standing policy of acquiring land only from willing sellers, it also has the power of eminent domain, as do other federal agencies. We use friendly condemnation when the Service and a seller cannot agree on property value, and both agree to allow a court to determine fair market value. When we cannot determine the rightful owner of a property, we also may use friendly condemnation to clear title. We do not expect to use friendly condemnation very often, if at all. We would not use condemnation otherwise, as it counters good working relations with the public.

Funding for Fee or Easement Purchase

Much of our funding to buy land comes from the Land and Water Conservation Fund (LWCF), which derives from certain user fees, the proceeds from the disposal of surplus federal property, the federal tax on motor boat fuels, and oil and gas lease revenues. About 90 percent of that fund now derives from outer continental

shelf oil and gas leases. The Federal Government receives 40 percent of that fund to acquire and develop nationally significant conservation lands. Another source of funding to purchase land is the Migratory Bird Conservation Fund (MBCF), which derives from Federal Duck Stamp revenue.

We plan to use both funds to buy either full or partial interests in lands in the project area. We will use LWCF funds to acquire land and easements that consist mainly of upland forest, which represents most of the expansion area. We may use MBCF funds for properties that include large tracts of forested, shrub or emergent wetlands and waters important for waterfowl. Another potential source for funding in that category is the North American Wetland Conservation Act.

Coordination

Throughout the planning process for the Wallkill River refuge CCP, we solicited and carefully considered public comments on Service land acquisition. We worked with the states of New Jersey and New York, seven municipalities, local land trusts, and local and national conservation organizations who are directly involved in land protection strategies in New Jersey and New York. The proximity of the federal-designated Highlands Preservation Area has led to additional coordination.

We distributed the draft LPP to all affected landowners, our conservation partners, State of New Jersey, State of New York, county offices and local agency and town offices for a 66-day comment period. We also held public comment meetings during the public comment period for the draft CCP/EA and LPP.

Socioeconomic and Cultural Impacts

We do not predict any significant adverse socioeconomic or cultural impacts. We believe a net positive benefit will result for the communities in New York and New Jersey. Towns will benefit from increased refuge revenue sharing payments and lower potential costs from these parcels, savings on the cost of community services, increased property values, increased watershed protection, maintenance of scenic values, and increased revenues for local businesses from refuge visitors who participate in bird watching, hunting and wildlife observation. This draft CCP/EA describes those benefits in detail.

Voters have consistently supported additional land protection. During our public involvement for the draft CCP/EA, local residents and town officials were enthusiastic about Service land acquisition. Many people encouraged us to develop a larger proposal. Acquisition by the Service, while aimed at protecting trust resources, watersheds, and other natural resource values, would also maintain the rural character of the area. Local reaction to proposed development next to the refuge tends to be negative and this is an increasing trend. Local residents and conservation organizations come to the refuge for support in opposing development projects, both near the current refuge and in the expansion area.

The only concern we heard expressed about Service land acquisition was the likelihood of its reducing public access. Although it is true that we would eliminate non-wildlife-dependent activities, we will continue to promote the six priority wildlife-dependent uses of the Refuge System, including hunting, fishing, wildlife observation and photography, and environmental education and interpretation. In addition, the refuge is working closely with state, county and local officials to promote development of a multi-use Rail Trail. Although the Service would object to motorized vehicles, a partnership that shares responsibility for the trail would lead to consideration of additional non-priority public uses on the trail such as jogging, in-line skating, cross-country skiing, snowshoeing horseback riding, dog walking and biking.

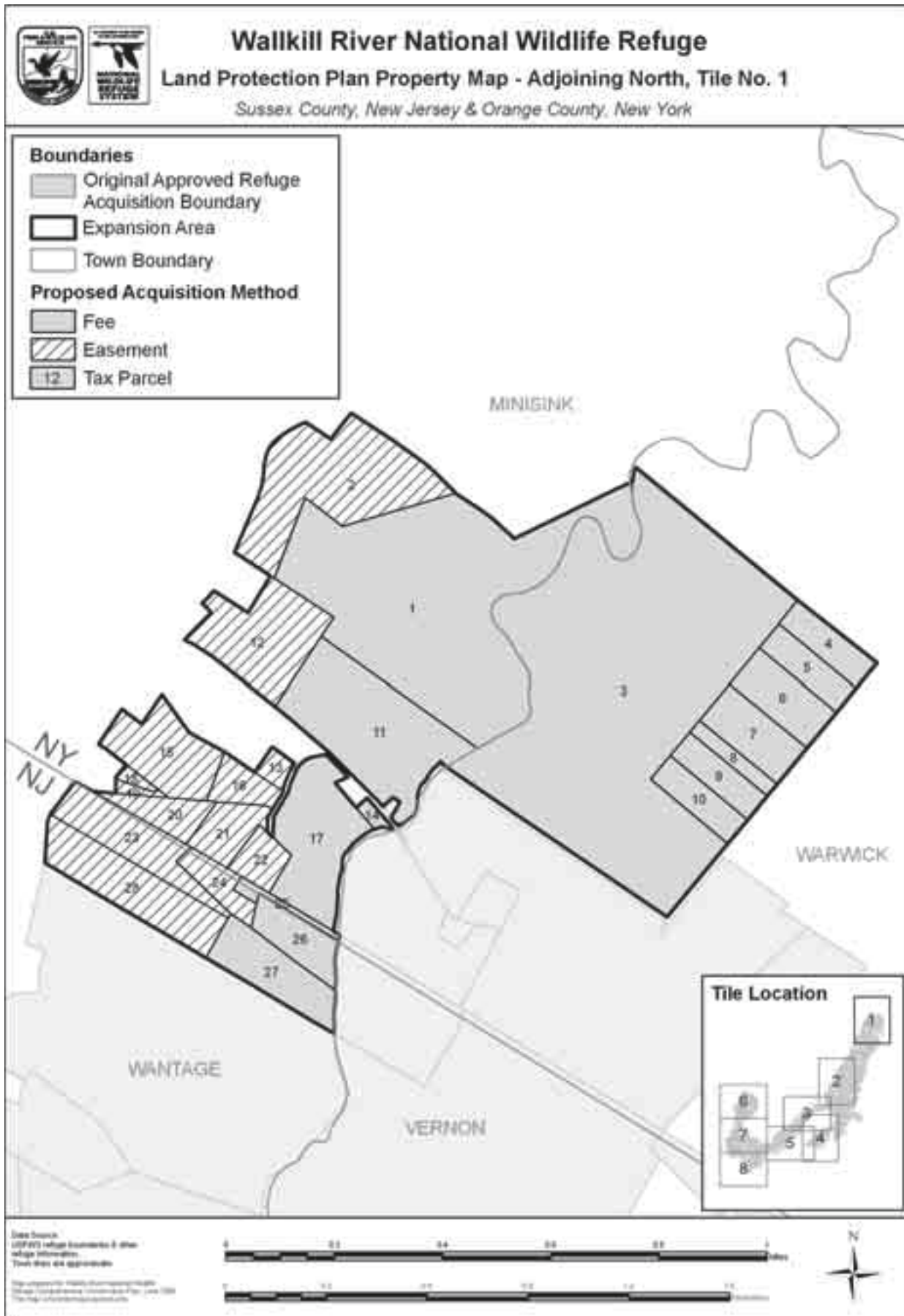
Refuge lands will increase protection for cultural resources in the area. Service ownership will protect known cultural sites against vandalism, and protect unidentified or undeveloped cultural sites from disturbance or destruction. The relatively wide and fertile Papakating Valley is likely to hold many cultural sites of a nature similar to those found in the adjoining Wallkill Valley. Our interpretation and environmental education programs will continue to promote public understanding and appreciation of the area's rich cultural resources.

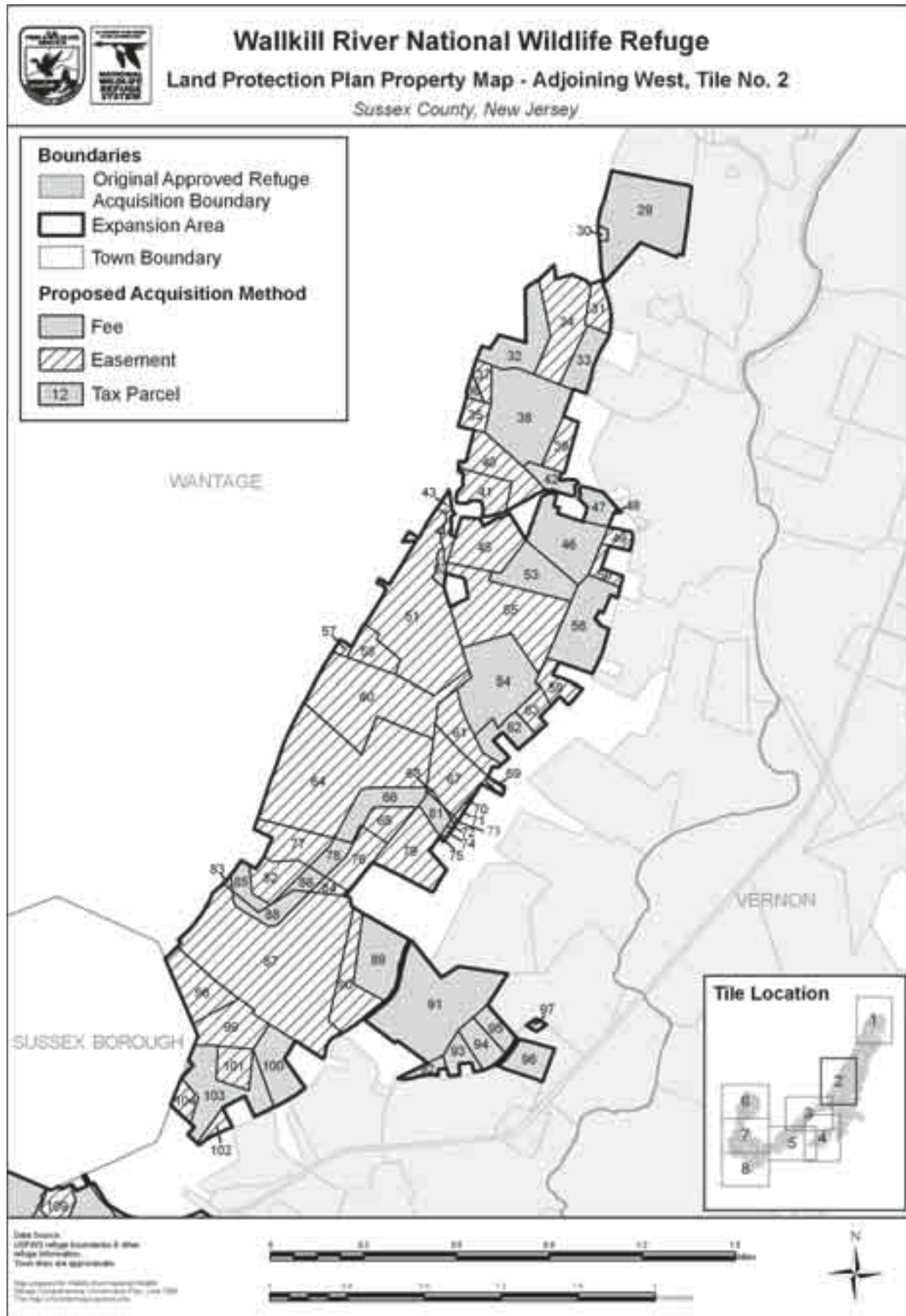
Attachment 1. Parcel Maps and Table

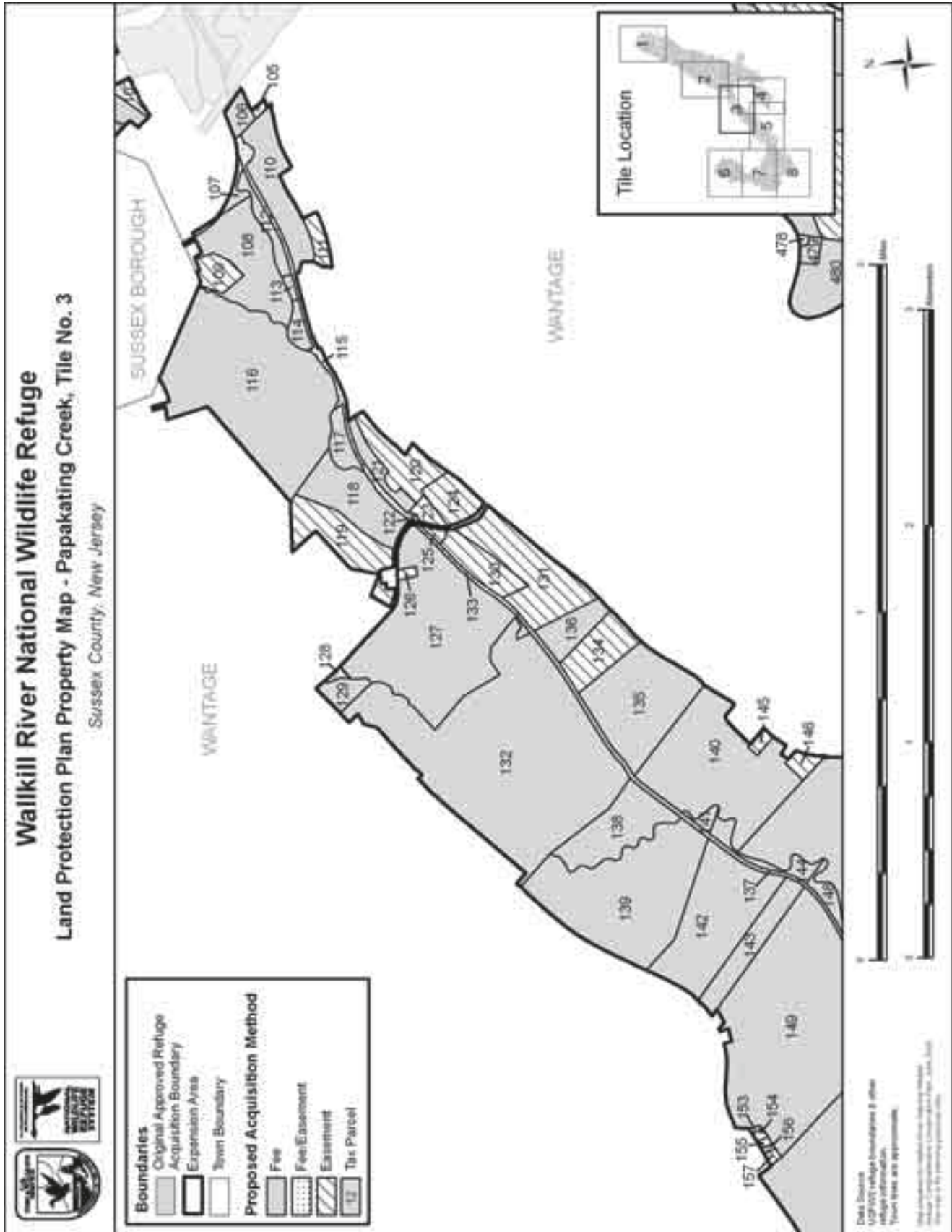
The maps show the original refuge approved acquisition boundary, the expansion area, and all land parcels in that area. The corresponding table lists each parcel, its tax map, block and lot number, acreage, our priority and recommended method for acquisition. The information is based on the New Jersey Association of County Tax Boards on-line database.

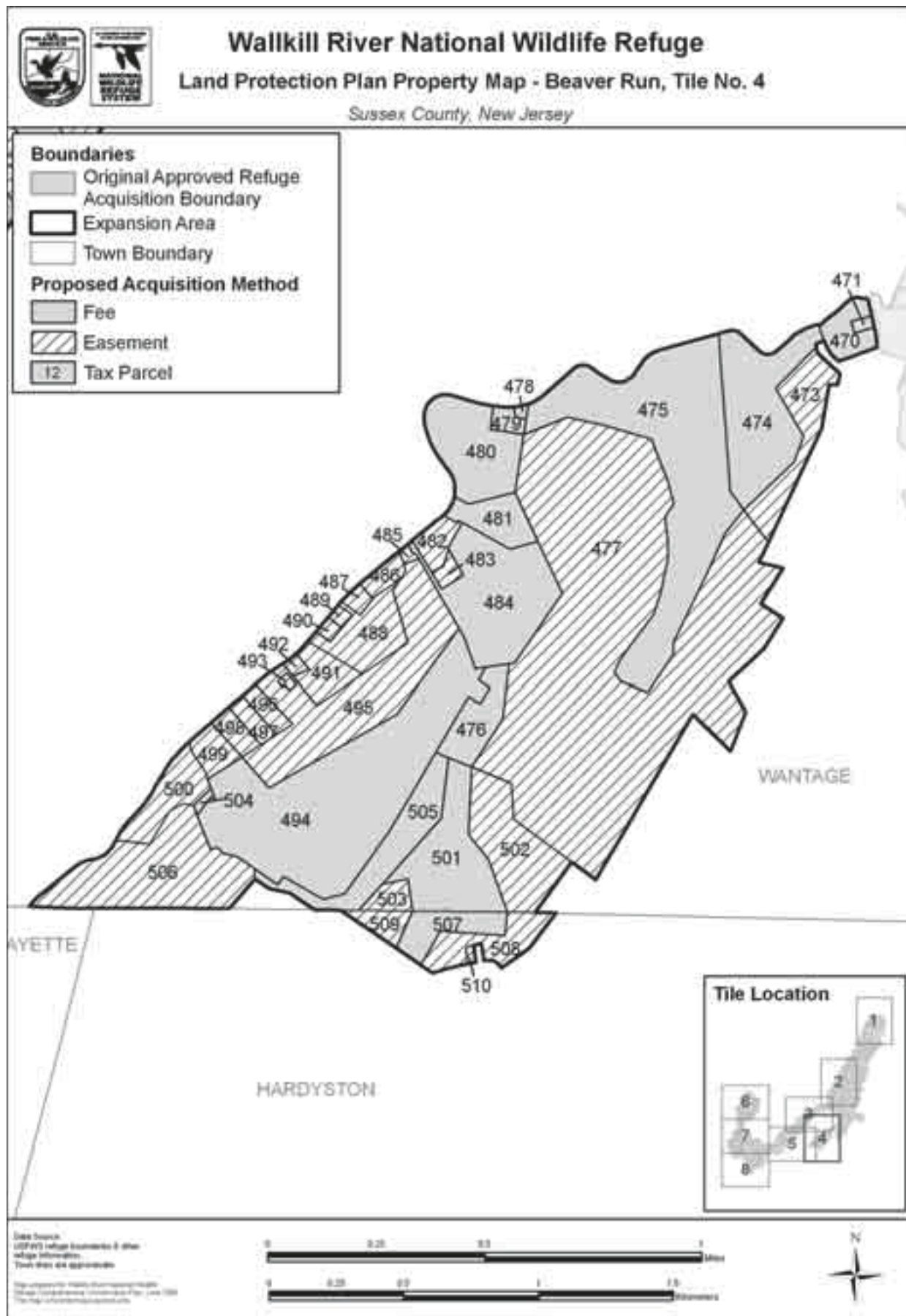
We will acquire either full or partial interest in land parcels, as available from willing sellers over time and as the availability of funding allows. We also plan to develop cooperative management agreements with the county and several state agencies for public lands in the project area. The definitions of each table column head follow the maps.

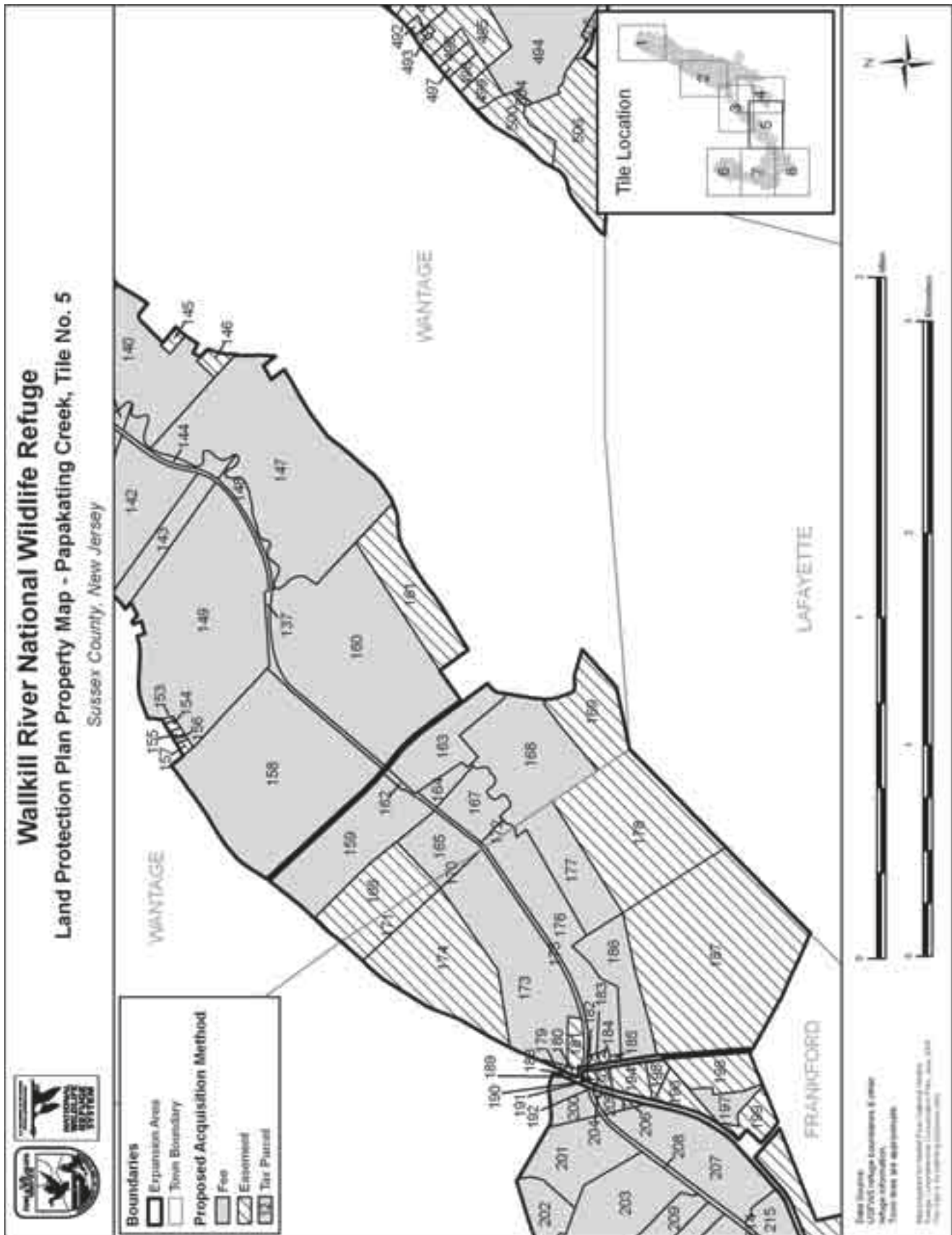


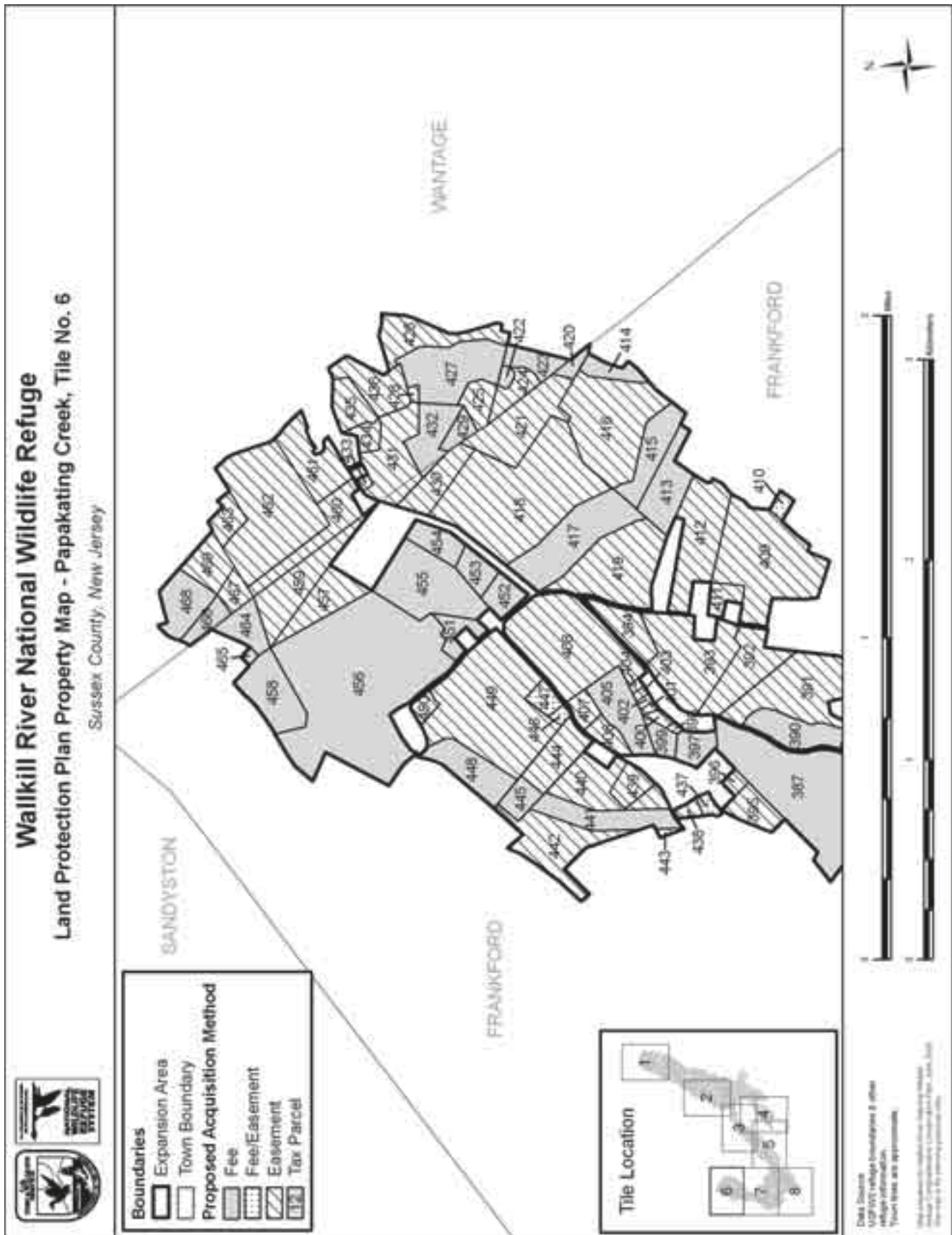


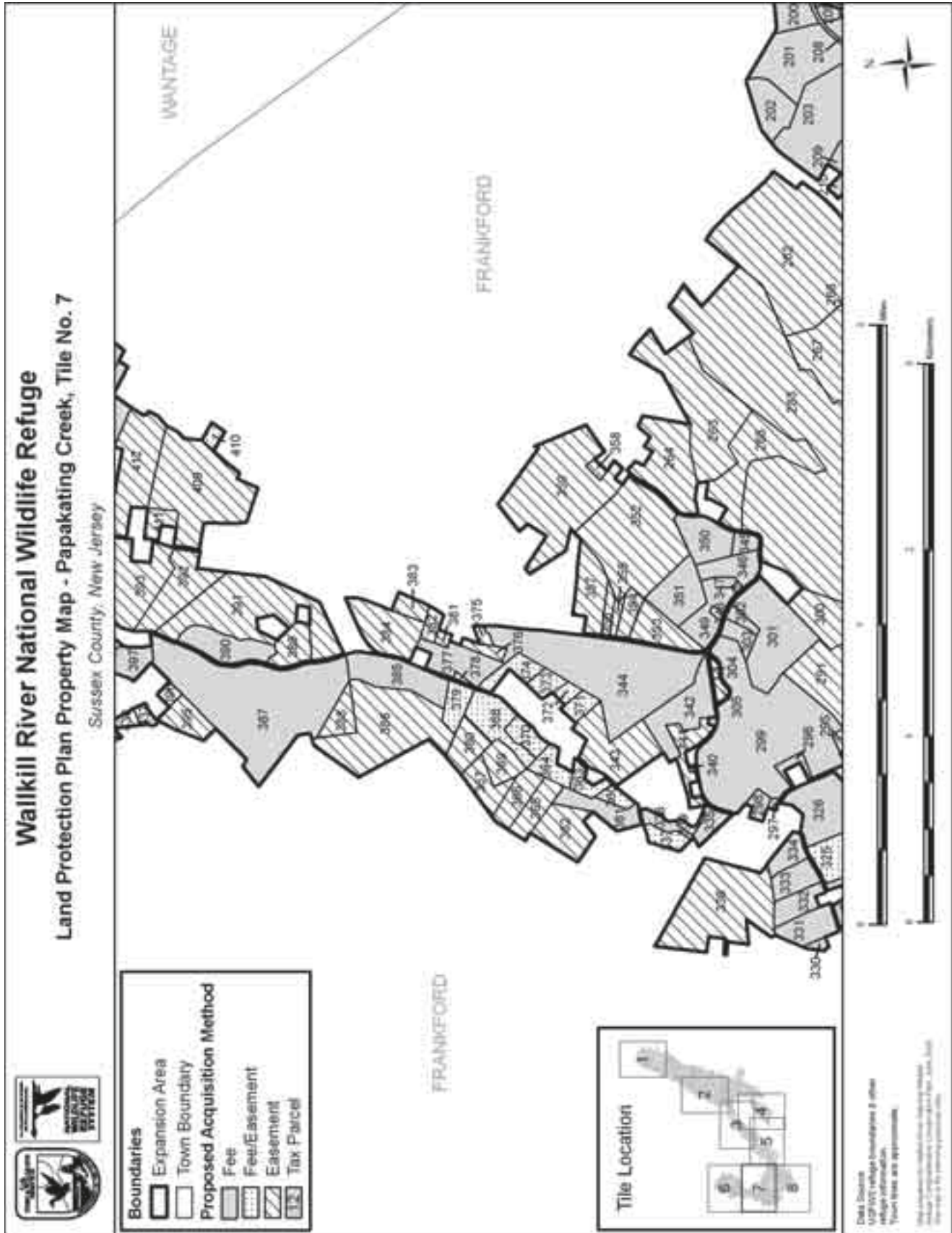


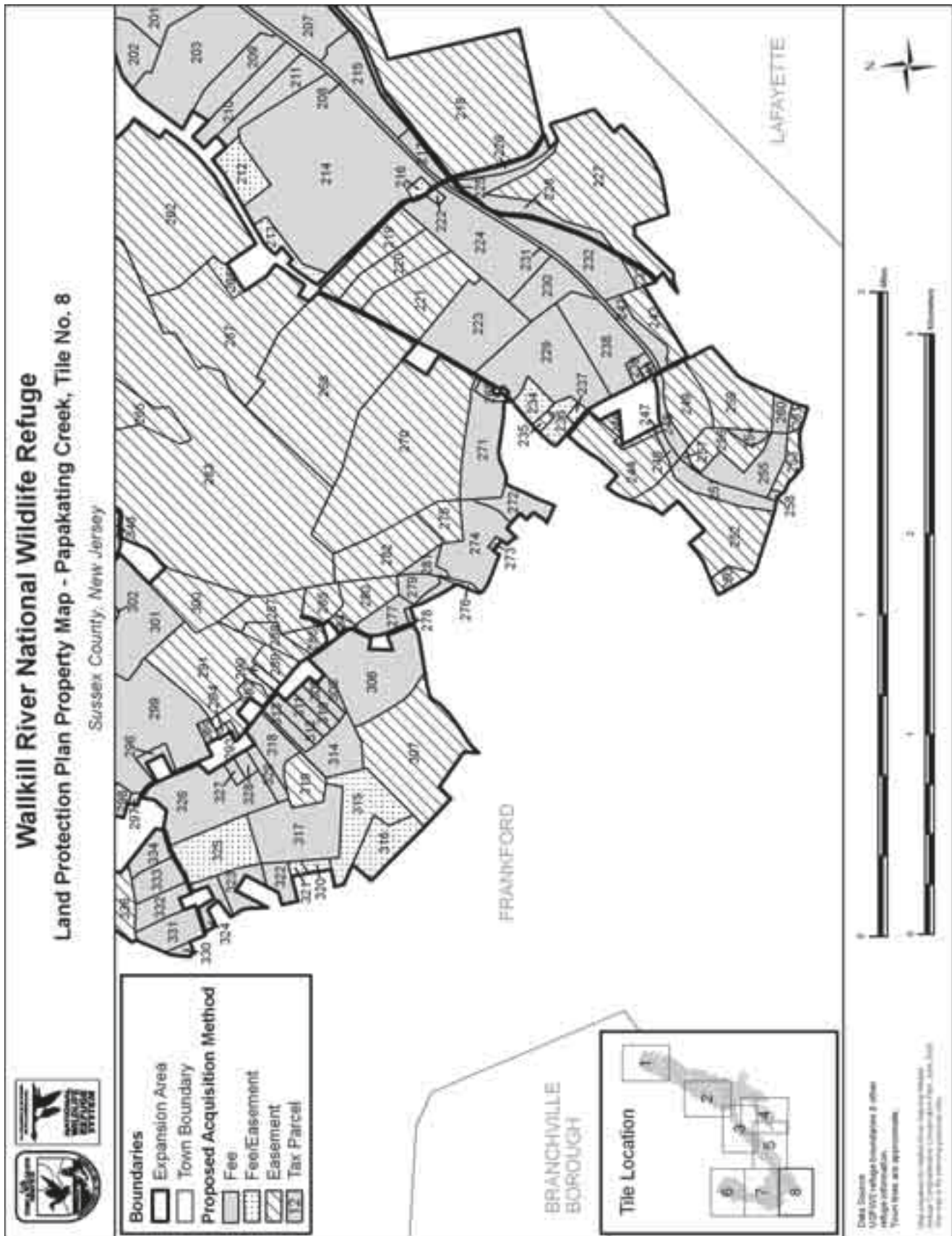












Guide to Land Protection Table

LPP Number	Our numerical identifier for each parcel in the acquisition boundary
Tax Map	County tax map number
Block Number	The block number on the tax map
Lot Number	The lot number on the tax map
Acres	GIS acres generated by Service cartographer
Priority	<p>Priority 1: Priority 1 parcels contain the majority of the lands and habitats that meet the threshold for federal protection by including them in the NWRs. Priority 1 lands are mostly located along County Route 565, along Beaver Run, or along the refuge's northern edge. They include:</p> <ul style="list-style-type: none"> ● Parcels that contain a significant amount of functioning undisturbed or relatively undisturbed wetlands of significant importance that support federal trust species (federal-listed species, migratory birds); ● Parcels that are of significant importance to the Wallkill River watershed; ● Parcels that border the Papakating Creek or Beaver Run; ● Parcels at the northern tip of the refuge that would be prime candidates to enhance or support the waterfowl impoundments at Liberty Marsh; ● Parcels that have known bog turtle habitats or contain prime bog turtle habitat; ● Parcels that have a significant value to migratory birds with prime nesting and foraging habitats for federal- and state-listed species. <p>Priority 2: Priority 2 parcels are located throughout the expansion area but tend to be clustered around Priority 1 lands or along the smaller tributaries of the Wallkill River or Papakating Creek. They include:</p> <ul style="list-style-type: none"> ● Wetlands associated with or hydrologically connected to Priority 1 wetlands; ● Areas with high potential for wetland restoration or enhancement not directly connected with the Liberty Marsh impoundment complex; ● Currently functioning but moderately disturbed wetlands; ● Parcels of moderate value to a variety of migratory bird species or of significant value to a limited number of migratory bird species; ● Parcels potentially of significant habitat value to endangered species found on or in close proximity to the refuge (dwarf wedgemussel and Indiana bat). <p>Priority 3: Most Priority 3 parcels are on uplands in the area west of the refuge or in higher lands along the Papakating Creek. They include:</p> <ul style="list-style-type: none"> ● Undeveloped upland habitats associated with federal trust species; ● Areas directly draining into or with significant ecological connections to a Priority 1 wetland; ● Undeveloped upland habitats associated with federal- and state-listed species habitats. <p>Priority 4: Priority 4 lands are scattered throughout the expansion area. Our intention is to minimize the need to acquire residences and buildings on these lands, while protecting and restoring habitat, so these parcels will be evaluated on case-by-case basis. Priority 4 parcels include:</p> <ul style="list-style-type: none"> ● Parcels adjacent to and important for the current refuge; ● Areas that would create administrative efficiencies and ecological integrities with the current and expanded refuge.
Acquisition Method	For lands in the acquisition boundary, whether we would acquire fee title or conservation easement (see discussion in "Acquisition Method"), or if we are proposing to develop a management agreement

Table G.3. Wallkill River NWR Land Protection Parcel List.

LPP number	Tax Map	Block Number	Lot Number	Acres	Priority	Acquisition Method
1	14	1	12	98.96	1	Fee
2	14	1	12	35.13	1	Easement
3	1	1	84	160.06	1	Fee
4	1	1	73	6.97	1	Fee
5	1	1	74	6.82	1	Fee
6	1	1	75	10.16	1	Fee
7	1	1	76	10.29	1	Fee
8	1	1	77	3.38	1	Fee
9	1	1	78	6.77	1	Fee
10	1	1	79	6.80	1	Fee
11	14	1	20.21	35.23	1	Fee
12	14	1	20.21	21.34	1	Easement
13	14	1	18.121	2.00	4	Easement
14	14	1	15	1.09	1	Fee
15	14	1	75.45	15.42	4	Easement
16	14	1	75.43	5.10	4	Easement
17	14	1	76	22.18	1	Fee
18	14	1	75.31	0.98	4	Easement
19	14	1	75.32	0.92	4	Easement
20	14	1	17	6.13	3	Easement
21	14	1	75.44	6.90	3	Easement
22	14	1	16	4.96	4	Easement
23	1	1.02	3.02	14.26	3	Easement
24	1	1.02	2.02	5.16	3	Easement
25	1	1.02	1	2.02	1	Fee
26	1	1.02	3.03	8.13	1	Fee
27	1	1.02	3.05	13.35	1	Fee
28	1	1.02	3.05	19.56	1	Easement
29	2	2	7	44.57	2	Fee
30	2	2	8	0.84	2	Fee
31	12	22	7	6.48	4	Easement
32	12	22	11.01	19.16	2	Fee
33	12	22	11.01	10.61	2	Fee
34	12	22	11.01	26.51	2	Easement
35	12	22	12	5.20	3	Easement

LPP number	Tax Map	Block Number	Lot Number	Acres	Priority	Acquisition Method
36	12	22	13	1.65	2	Fee
37	12	22	13	3.92	2	Easement
38	12	22	13	39.38	2	Fee
39	12	22	13	7.20	2	Easement
40	12	22	13	17.37	2	Easement
41	12	22	1.01	11.11	3	Easement
42	12	22	2	5.61	2	Fee
43	11	21	23	1.17	3	Easement
44	11	21	22	2.91	3	Easement
45	11	21	21.01	21.10	3	Easement
46	11	21	18.03	25.60	2	Fee
47	11	21	18.01	6.55	2	Fee
48	11	21	17	0.15	4	Fee
49	11	21	16.02	3.42	4	Easement
50	11	21	16.01	3.83	4	Easement
51	11	21	25.01	63.46	3	Easement
52	11	21	25.02	2.08	2	Fee
53	11	21	25.02	17.35	2	Fee
54	11	21	25.02	35.05	2	Fee
55	11	21	25.02	44.72	2	Easement
56	11	21	15	25.54	2	Fee
57	11	21	33.03	1.27	3	Easement
58	11	21	33.01	8.78	3	Easement
59	11	21	13.02	6.83	4	Easement
60	11	21	33.02	51.50	3	Easement
61	11	21	13.01	12.92	2	Easement
62	11	21	13.03	9.69	2	Fee
63	11	21	13.04	5.46	4	Easement
64	11	21	34	85.49	4	Easement
65	11	21	34	7.60	4	Easement
66	11	21	34	13.34	4	Fee
67	11	21	12.02	19.53	3	Easement
68	11	21	12.02	0.45	3	Fee
69	11	21	12.03	0.94	3	Easement
70	11	21	12.01	0.23	3	Easement
71	11	21	11.04	0.63	3	Easement

LPP number	Tax Map	Block Number	Lot Number	Acres	Priority	Acquisition Method
72	11	21	11.02	0.29	3	Fee
73	11	21	11.02	0.22	3	Easement
74	11	21	11.05	0.45	3	Fee
75	11	21	11.05	0.15	3	Easement
76	11	21	35.01	11.00	3	Easement
77	11	21	35.01	13.82	3	Easement
78	11	21	35.01	5.47	3	Fee
79	11	21	11.01	21.45	3	Easement
80	11	21	11.01	0.19	3	Easement
81	11	21	11.01	4.47	3	Fee
82	11	21	25.06	11.06	3	Easement
83	11	21	25.06	0.46	3	Easement
84	11	21	25.06	2.55	3	Easement
85	11	21	25.06	5.52	3	Fee
86	11	21	25.06	3.79	3	Fee
87	11	21	9	112.42	3	Easement
88	11	21	9	7.39	3	Fee
89	11	21	10	20.56	2	Fee
90	11	21	10	17.27	2	Easement
91	4	2	20.01	53.89	2	Fee
92	4	2	21.01	2.90	2	Fee
93	4	2	21.02	5.80	2	Fee
94	4	2	21.03	7.92	2	Fee
95	4	2	21.04	5.87	2	Fee
96	4	2	21.06	9.31	2	Fee
97	4	2	22.02	0.86	4	Easement
98	11	21	43	16.47	3	Easement
99	11	21	8	16.57	1	Easement
100	11	21	8	15.40	1	Fee
101	11	21	7	8.70	1	Easement
102	11	21	7	2.92	1	Easement
103	11	21	7	24.54	1	Fee
104	11	21	7	4.48	1	Easement
105	4	2	40	0.74	2	Fee
106	4	2	41	4.34	2	Fee
107	10	18	39	3.08	1	Fee

LPP number	Tax Map	Block Number	Lot Number	Acres	Priority	Acquisition Method
108	10	18	44	31.96	1	Fee
109	10	18	44	6.53	1	Easement
110	10	18	36.01	23.52	2	Fee
111	10	18	36.01	4.37	2	Easement
112	10	18	38.01	5.96	1	Fee
113	10	18	38.03	1.13	1	Fee
114	10	18	38.02	3.75	1	Fee
115	10	18	14	11.23	2	Fee/Easement
116	10	18	1.01	111.56	1	Fee
117	10	18	15	6.14	1	Fee
118	10	18	12.01	24.49	2	Fee
119	10	18	12.08	22.58	3	Easement
120	10	18	25	15.49	3	Easement
121	10	18	25	6.45	3	Fee
122	10	18	22	0.21	4	Easement
123	10	18	23	3.06	3	Easement
124	10	18	24	9.93	3	Easement
125	10	17	9.02	1.19	4	Easement
126	10	17	10.02	1.04	4	Easement
127	10	17	10.01	90.74	1	Fee
128	10	17	11	0.87	4	Easement
129	10	17	12	5.55	2	Fee
130	10	17	9.01	12.31	3	Easement
131	10	17	8	33.80	3	Easement
132	10	17	13	171.86	1	Fee
133				2.75	2	Fee/Easement
134	10	17	7	15.99	2	Easement
135	10	17	7	45.15	2	Fee
136	10	17	7	11.25	2	Fee
137	9	17	28	16.64	1	Fee
138	9	17	21	26.02	1	Fee
139	9	17	22	79.04	1	Fee
140	9	17	4.01	69.27	1	Fee
141	9	17	6	2.04	1	Fee
142	9	17	23.01	50.19	1	Fee
143	9	17	23.02	16.91	1	Fee

LPP number	Tax Map	Block Number	Lot Number	Acres	Priority	Acquisition Method
144	9	17	5	6.87	1	Fee
145	9	17	4.03	1.70	4	Easement
146	9	17	4.02	3.11	4	Easement
147	9	17	2	139.26	1	Fee
148	9	17	3	6.00	1	Fee
149	9	17	27	131.05	1	Fee
150				0.00	4	Easement
151	9	17	32	0.00	4	Easement
152				0.00	4	Easement
153	9	17	32	0.30	4	Easement
154	9	17	33	0.61	4	Easement
155	9	17	34	0.50	4	Easement
156	9	17	35	0.40	4	Easement
157	9	17	36	0.84	4	Easement
158	9	17	38	125.93	1	Fee
159	9	16	5	50.14	1	Fee
160	9	17	1	126.84	1	Fee
161	9	17	1	32.77	1	Easement
162	9	16	4	2.83	1	Fee
163	9	16	3	26.12	1	Fee
164	9	16	7	5.06	1	Fee
165	9	16	6	16.66	1	Fee
166	9	16	6	28.05	1	Easement
167	9	16	8	16.37	1	Fee
168	9	16	2	54.38	1	Fee
169	9	16	2	28.57	1	Easement
170	1	1	1	1.56	1	Fee
171	1	1	1	11.37	1	Easement
172	9	16	9	1.67	1	Fee
173	1	1	2	69.74	1	Fee
174	1	1	2	61.05	1	Easement
175	1	1	4	5.46	1	Fee
176	1	1	5	45.86	1	Fee
177	1	1	13	29.39	1	Fee
178	1	1	13	79.15	1	Easement
179	1	1	15	0.51	4	Easement

LPP number	Tax Map	Block Number	Lot Number	Acres	Priority	Acquisition Method
180	1	1	14	0.54	3	Easement
181	1	1	3	4.27	3	Easement
182	1	1	6	0.19	4	Easement
183	1	1	7	0.54	4	Easement
184	1	1	8	0.70	4	Easement
185	1	1	9	0.39	4	Easement
186	1	1	10	26.59	1	Fee
187	1	1	10	142.03	1	Easement
188	1	4	12	0.05	4	Easement
189	1	4	11	0.24	4	Easement
190	1	4	10	0.05	4	Easement
191	1	4	8	0.64	4	Easement
192	1	4	9	0.02	4	Easement
193	1	4	7.01	1.52	3	Easement
194	1	4	6	6.34	3	Easement
195	1	4	5	3.04	3	Easement
196	1	4	4	6.25	1	Easement
197	1	4	2	7.66	1	Fee
198	1	4	2	15.96	1	Easement
199	1	4	3	7.98	1	Easement
200	1	3	1	9.82	1	Fee
201	1	3	2	31.09	1	Fee
202	1	3	3	13.54	1	Fee
203	1	3	4	50.97	1	Fee
204	1	3	14	0.23	4	Easement
205	1	3	13	2.26	1	Fee
206	1	3	12	0.68	4	Easement
207	1	3	11	46.12	1	Fee
208	1	3	10	8.87	1	Fee
209	1	3	5	16.16	1	Fee
210	1	3	5.01	14.59	1	Fee
211	1	3	5.02	15.02	1	Fee
212	1	3	6	11.80	3	Fee/Easement
213	1	3	7	6.66	3	Fee/Easement
214	1	3	8	132.91	1	Fee
215	1	3	9	18.28	1	Fee

LPP number	Tax Map	Block Number	Lot Number	Acres	Priority	Acquisition Method
216	1	3	8.01	1.83	2	Fee/Easement
217	1	3	9.01	4.73	1	Fee
218	1	6	1	111.06	1	Easement
219	2	9	6.02	17.19	2	Easement
220	2	9	6.01	18.24	2	Easement
221	2	9	6	31.20	2	Easement
222	2	9	5.01	1.04	1	Fee
223	2	9	7	34.72	1	Fee
224	2	9	5	42.86	1	Fee
225	2	9	4	0.74	1	Fee
226	2	8	1	4.53	4	Fee
227	2	8	2	83.63	1	Easement
228	2	8	2	16.56	1	Fee
229	2	9	9	43.86	1	Fee
230	2	9	3	15.06	1	Fee
231	2	9	10	7.17	1	Fee
232	2	9	2	24.15	1	Fee
233	2	9	2	2.52	1	Easement
234	2	9	9.01	6.21	3	Fee/Easement
235	2	9	9.05	1.32	4	Easement
236	2	9	9.04	5.84	3	Fee/Easement
237	2	9	9.03	1.34	3	Fee/Easement
238	2	9	9.07	26.41	1	Fee
239	2	9	9.06	2.42	1	Fee
240	2	9	9.02	0.61	4	Easement
241	2	9	9.02	0.44	4	Fee
242	2	9	11	7.03	1	Fee
243	2	9	11	10.45	1	Easement
244	3	10	3.050	25.16	1	Easement
245	3	10	3.050	1.89	1	Fee
246	3	10	4	3.41	1	Easement
247	3	10	4	0.32	1	Fee
248	3	10	2.000	5.28	1	Fee
249	3	10	2.000	16.54	1	Easement
250	3	10	4.000	3.87	3	Easement
251	3	10	3.000	10.80	1	Fee

LPP number	Tax Map	Block Number	Lot Number	Acres	Priority	Acquisition Method
252	3	10	3.000	36.93	1	Easement
253	3	10	6.000	5.83	1	Easement
254	3	10	6.000	2.43	1	Fee
255	3	10	6.000	16.13	1	Fee
256	3	10	6.000	12.59	1	Easement
257	3	10	6.000	0.64	1	Fee
258	3	10	6.000	0.61	1	Fee
259	3	10	1	25.58	1	Easement
260	3	10	1	3.71	1	Fee
261	3	10	1	2.31	1	Easement
262	7	29	1	110.91	2	Easement
263	7	29	6	49.92	3	Easement
264	7	29	9	29.51	3	Easement
265	7	29	10	31.80	3	Easement
266	7	29	18.02	3.71	3	Fee/Easement
267	7	29	18	70.08	2	Easement
268	7	29	17	103.35	2	Easement
269	7	29	19	2.13	1	Fee
270	7	29	16	114.21	1	Easement
271	7	29	16	24.28	1	Fee
272	7	29	14.06	8.59	1	Fee
273	7	29	14.04	0.51	4	Easement
274	7	29	14.03	23.75	1	Fee
275	7	29	14.03	8.24	1	Easement
276	7	29	13	1.02	4	Easement
277	7	28	1	9.96	1	Fee
278	7	28	1.03	0.61	2	Fee
279	7	28	2	5.44	1	Fee
280	7	28	2	12.21	1	Easement
281	7	29	12	3.97	2	Fee
282	7	29	12	25.49	2	Easement
283	7	29	11	302.89	2	Easement
284	7	28	2.01	1.57	2	Easement
285	7	28	2.02	7.58	2	Easement
286	8b	30	2.02	4.48	3	Easement
287	8b	30	2.01	14.87	2	Easement

LPP number	Tax Map	Block Number	Lot Number	Acres	Priority	Acquisition Method
288	8b	30	2	7.22	2	Easement
289	8b	30	3.06	5.89	3	Easement
290	8b	30	3.05	1.89	3	Easement
291	8b	30	3.04	41.30	3	Easement
292	8b	30	3.03	7.01	3	Easement
293	8b	30	3.02	0.74	4	Easement
294	8b	30	3.01	0.71	4	Easement
295	8b	30	4.02	1.88	3	Easement
296	8b	30	4.01	3.01	1	Fee
297	8b	30	5.01	0.71	1	Fee
298	8b	30	5	3.42	1	Fee
299	8b	30	4	98.32	1	Fee
300	8b	30	1	20.07	2	Easement
301	8b	30	6	35.14	1	Fee
302	8b	30	6.02	2.81	3	Fee
303	8b	30	6.01	4.84	3	Fee
304	8b	30.01	1.01	1.15	4	Easement
305	8b	30.01	2	1.99	4	Easement
306	6	25	15	42.12	1	Fee
307	6	25	15	56.10	1	Easement
308	6	25	14.04	2.38	1	Fee
309	6	25	14.05	3.36	1	Fee
310	6	25	14.06	3.68	1	Fee
311	6	25	14.07	3.67	1	Fee
312	6	25	14.08	4.37	1	Fee
313	6	25	14.03	4.55	1	Fee
314	6	25	14.02	14.81	1	Fee
315	6	25	11	25.07	3	Fee/Easement
316	6	25	10.000	14.31	3	Fee/Easement
317	6	25	14	32.06	1	Fee
318	6	25	14	10.02	1	Fee
319	6	25	14	10.31	1	Easement
320	6	25	10.040	2.01	3	Fee/Easement
321	6	25	10.030	1.33	3	Fee/Easement

LPP number	Tax Map	Block Number	Lot Number	Acres	Priority	Acquisition Method
322	6	25	12.030	5.92	1	Fee
323	6	25	12.02	7.64	1	Fee
324	6	25	12.000	5.16	1	Fee
325	6	25	12.010	22.61	3	Fee/Easement
326	6	25	13	36.63	1	Fee
327	6	25	13.04	1.77	1	Fee
328	6	25	13.03	2.26	1	Fee
329	6	25	14.03	4.67	1	Fee
330	12	44.01	5.01	1.44	1	Fee
331	12	44.01	4.01	11.19	1	Fee
332	12	44.01	4	8.40	1	Fee
333	12	44.01	4.02	8.68	1	Fee
334	12	44.01	3.05	6.68	1	Fee
335	12	44.01	3	4.99	3	Fee
336	12	44.01	3	51.42	3	Easement
337	12	44.01	1.04	4.94	2	Fee/Easement
338	12	44.01	1.04	3.98	2	Fee
339	12	44.01	2	1.36	2	Fee/Easement
340	8b	31	2	0.30	4	Easement
341	8b	31	12	9.87	3	Easement
342	8b	31	5	20.83	1	Fee
343	8b	31	10	26.27	3	Easement
344	8b	31	6	77.69	1	Fee
345	8b	32	10	3.59	1	Fee
346	8b	32	9	10.05	1	Fee
347	8b	32	8	0.51	4	Easement
348	8b	32	7.01	0.76	4	Easement
349	8b	32	7	13.79	1	Fee
350	8b	32	11	14.30	1	Fee
351	8b	32	12	16.90	1	Fee
352	8b	32	12	57.72	1	Easement
353	8b	32	6.01	12.82	3	Easement
354	8b	32	6.05	5.48	3	Easement
355	8b	32	6.08	2.07	3	Easement

LPP number	Tax Map	Block Number	Lot Number	Acres	Priority	Acquisition Method
356	8b	32	6.06	3.09	3	Easement
357	8b	32	6.07	15.46	3	Easement
358	8b	32	16.05	1.56	4	Easement
359	8b	32	16	63.36	3	Easement
360	12	44	9	3.51	2	Fee/Easement
361	12	44.01	9.040	10.99	2	Fee
362	12	44.01	9.040	16.01	2	Easement
363	12	44	9.06	5.07	2	Fee/Easement
364	12	45	9.07	6.76	2	Fee/Easement
365	12	44	9.0000	9.29	3	Easement
366	12	44	9.060	9.77	3	Easement
367	12	44	9.070	9.32	3	Easement
368	12	45	8.01	14.59	2	Fee/Easement
369	12	45	8.01	8.61	2	Easement
370	12	45	8	6.35	2	Fee/Easement
371	8b	31	9.03	4.56	3	Fee/Easement
372	8b	31	9.04	2.53	3	Fee/Easement
373	8b	31	9	4.68	3	Fee/Easement
374	8b	31	9.05	7.09	3	Fee/Easement
375	8b	31	6.02	1.68	3	Easement
376	8b	31	6.01	3.31	3	Easement
377	8b	31	13	14.90	1	Fee
378	8b	31	14	0.72	4	Easement
379	11	44	6	7.21	2	Fee/Easement
380	12	45	7	9.86	3	Easement
381	8b	31	8.01	1.42	3	Easement
382	8b	31	8	3.50	3	Easement
383	8b	31	7.05	4.52	3	Easement
384	8b	31	7	20.01	3	Easement
385	11	44	5	20.97	1	Fee
386	11	44	5	50.83	1	Easement
387	11	44	4	96.46	1	Fee
388	11	44	4	7.55	1	Easement
389	10	40	4.010	9.59	1	Easement

LPP number	Tax Map	Block Number	Lot Number	Acres	Priority	Acquisition Method
390	10	40	4	15.64	1	Fee
391	10	40	4	51.46	1	Easement
392	10	40	7	20.81	3	Easement
393	10	40	2	37.60	3	Easement
394	10	40	1	11.84	3	Easement
395	11	44	11.02	9.38	2	Easement
396	11	44	11.03	2.29	4	Easement
397	11	44	11.05	7.26	2	Fee
398	11	44	3	0.68	3	Fee/Easement
399	11	44	11.06	4.97	2	Fee
400	11	44	2	1.71	3	Easement
401	11	44	2.04	0.81	4	Easement
402	11	44	2.03	0.86	4	Easement
403	11	44	2.01	0.76	4	Easement
404	11	44	2.02	0.76	4	Easement
405	11	44	11.07	17.46	1	Fee
406	11	44	12	5.65	1	Easement
407	11	44	13	4.86	3	Easement
408	11	44	1	52.42	1	Easement
409	10	39	7.000	52.78	3	Easement
410	10	39	7.020	2.35	3	Fee/Easement
411	10	39	7.020	5.09	3	Easement
412	10	39	12	30.12	3	Easement
413	10	39	6.000	17.08	1	Fee
414	10	39	5.000	6.23	1	Fee
415	10	39	5.000	15.84	1	Fee
416	10	39	5.000	46.69	1	Easement
417	10	39	13	32.74	1	Fee
418	10	39	13	79.91	1	Easement
419	10	39	13	37.74	1	Easement
420	10	39	2.000	2.92	1	Fee
421	10	39	2.000	26.70	1	Easement
422	34	126	1.01	1.71	1	Fee
423	34	126	1.01	7.57	1	Fee

LPP number	Tax Map	Block Number	Lot Number	Acres	Priority	Acquisition Method
424	34	126	1.01	7.30	1	Easement
425	34	126	2.000	7.39	1	Easement
426	34	126	2.000	18.16	1	Easement
427	34	126	2.000	29.46	1	Fee
428	34	126	2.000	0.97	1	Easement
429	34	126	13.000	4.68	2	Fee
430	10	39	17.000	12.76	3	Easement
431	34	126	12	24.29	2	Easement
432	34	126	12	13.87	2	Fee
433	34	126	11	0.95	4	Easement
434	34	126	9	4.47	4	Easement
435	34	126	8	9.76	4	Easement
436	34	126	6	15.37	2	Easement
437	11	43	2.01	2.23	2	Fee/Easement
438	11	43	2.06	2.21	2	Easement
439	11	42	19.02	6.97	3	Easement
440	11	42	19	20.94	2	Easement
441	11	42	19	17.51	2	Fee
442	11	42	19	26.09	2	Easement
443	11	42	19	0.82	2	Easement
444	11	42	19.01	14.53	1	Easement
445	11	42	19.01	6.41	1	Fee
446	11	42	20	1.57	3	Fee/Easement
447	11	42	21	4.62	3	Fee/Easement
448	11	42	1	17.15	1	Fee
449	11	42	1	70.36	1	Easement
450	11	42	2	3.29	4	Easement
451	10	41	7	6.93	1	Fee
452	10	41	7	7.27	1	Fee
453	10	41	7	7.07	1	Fee
454	10	41	7	8.86	1	Fee
455	10	41	7	33.36	1	Fee
456	10	41	8	131.57	1	Fee
457	10	41	8	15.42	1	Easement

LPP number	Tax Map	Block Number	Lot Number	Acres	Priority	Acquisition Method
458	10	41	11	20.18	1	Fee
459	10	41	1	22.97	3	Easement
460	44	161	1.03	16.02	3	Easement
461	44	161	3	19.46	3	Easement
462	44	161	2.03	56.79	3	Easement
463	44	161	4.01	6.80	3	Easement
464	10	41	12	9.82	1	Fee
465	10	41	12.02	0.99	1	Fee
466	44	161	7.02	5.75	1	Fee
467	44	161	7.02	5.36	1	Easement
468	44	161	7.01	14.81	1	Fee
469	44	161	7.01	10.84	1	Easement
470	5	6	3.01	7.62	1	Fee
471	5	6	3.02	0.87	1	Fee
473	6	11	9.01	18.00	1	Easement
474	6	11	9.01	36.62	1	Fee
475	6	11	10	87.95	1	Fee
476	6	11	10	11.79	1	Fee
477	6	11	10	245.37	1	Easement
478	6	11	11.02	0.55	1	Fee
479	6	11	11.03	2.51	1	Fee
480	6	11	11.07	24.62	1	Fee
481	6	11	11.04	10.08	1	Fee
482	6	11	11.05	4.89	3	Easement
483	6	11	11.06	1.90	3	Easement
484	6	11	11.01	38.72	1	Fee
485	6	11	15.02	0.68	4	Easement
486	6	11	12.02	3.35	4	Easement
487	6	11	12.01	1.74	4	Easement
488	6	11	13.01	14.32	4	Easement
489	6	11	13.04	0.98	4	Easement
490	6	11	13.02	1.07	4	Easement
491	6	11	13.05	7.40	4	Easement
492	6	11	13.03	1.03	4	Easement

Attachment G.1. Parcel Maps and Table

LPP number	Tax Map	Block Number	Lot Number	Acres	Priority	Acquisition Method
493	6	11	14	0.53	4	Easement
494	6	11	15.01	98.16	1	Fee
495	6	11	15.01	49.56	1	Easement
496	6	11	16.02	3.29	4	Easement
497	6	11	16.01	3.09	4	Easement
498	6	11	16	3.72	4	Easement
499	6	11	17	5.22	4	Easement
500	6	11	18	12.33	4	Easement
501	6	11	23	28.99	1	Fee
502	6	11	23	25.58	1	Easement
503	6	11	23	3.85	1	Easement
504	6	11	19	0.68	1	Fee
505	6	11	19	20.67	1	Fee
506	6	11	19	43.27	1	Easement
507	26	68	11.01	10.21	1	Fee
508	26	68	11.01	12.65	1	Easement
509	26	68	11.01	4.61	1	Easement
510	26	68	11.02	0.48	4	Easement

Attachment 2. Threshold Standards and Other Considerations

Introduction

This attachment relates our Land Protection Plan (LPP) for the Wallkill River National Wildlife Refuge (refuge) to the threshold standards under consideration by the Service Director for determining the strategic growth of the National Wildlife Refuge System (Refuge System). In addition, it relates our LPP to the Land Acquisition Priority System (LAPS), and describes operating and maintenance costs, land acquisition authorities and sources for funding, public support for the LPP, and our strategies for public use.

Our plan for Service land acquisition, coupled with additional protection by our conservation partners, will ensure the conservation in perpetuity of the significant federal trust resources in the Kittatinny Valley and its environs.

Threshold Standards

Conserve Trust Species

Migratory Birds

The Atlantic Coast Joint Venture of the North American Waterfowl Management Plan identifies the Wallkill River as a priority area. Migratory colonial waterbirds, songbirds, raptors, freshwater wetland birds, and waterfowl funnel through the Kittatinny Valley to take refuge in the forest and wetland habitats. The valley's grasslands are crucial for grassland birds and foraging raptors.

The refuge lies in the Northern Ridge and Valley physiographic area, referred to as Bird Conservation Area 17 in the Partners in Flight (PIF) Bird Conservation Plan. Roughly, 50 percent of the Northern Ridge and Valley physiographic area is forested; another 40 percent is in agricultural production consisting primarily of a mixture of pasture, hayfields, and corn. The refuge lies in one of the more non-forested landscapes in that physiographic area. Furthermore, much of the land already managed or protected in this physiographic area is forested (state forests and parks). Therefore, the refuge holds the unique position of being a large tract of public land with non-forested habitats that we could manage for grassland or shrubland birds; and it lies in a landscape that has a significant proportion of open land, where it makes ecological sense to manage for those types of species (Dettmers 2000).

We will maintain 978 acres, or 10 percent of the expansion area, in scrub-shrub habitat for shrub nesting land birds of concern, such as the golden winged warbler, prairie warbler, field sparrow, eastern towhee, and gray catbird. Scrub-shrub habitat is a high priority in the Northern Ridge and Valley, primarily because it still supports numerous breeding populations of golden-winged warblers, one of the highest priority species in the Area 17 PIF Plan. The PIF plan considers managing for this species as a high priority wherever feasible. Other shrubland species have undergone significant population declines in this physiographic area (Dettmers 2000).

The landscape composition around the expanded refuge also presents an opportunity for the refuge to make significant contributions to the conservation of grassland birds. We will maintain approximately 791 acres, or 8 percent of the expansion area, in grassland habitat. For the grassland habitat suite, the PIF Bird Conservation Plan for Area 17 focuses on setting objectives for bobolinks, grasshopper sparrows, and upland sandpipers.

Mature hardwood forest is the top conservation priority in Area 17. With much of the existing forestland in this physiographic area lying on ridges, bottomland forests are a rare commodity (Dettmers 2000). Managing for forested bottomland corridors along the Wallkill River and its tributaries would constitute a significant contribution to the overall goals for Area 17, especially its focus on cerulean warblers and Louisiana water thrushes. We will maintain approximately 2,455 acres (22 percent of the expansion area) in forested upland habitat and 3,135 acres (34 percent of the expansion area) in forested wetland habitat. These will support nesting interior-forest-dwelling land birds of concern, such as the cerulean warbler, worm-eating warbler, wood thrush, eastern wood peewee, Baltimore oriole, Louisiana water thrush, Kentucky warbler, and scarlet tanager. We will also maintain 1,904 acres, or 20 percent of the expansion area, in non-forested wetland habitat to provide spring and fall migratory waterfowl and shorebird habitat.

Endangered and Threatened Species

Bog turtle

The Bog Turtle Recovery Plan (USFWS 2001) identified the Wallkill River watershed as a recovery subunit. Federal-listed threatened bog turtles live in sedge fens throughout the Papakating Creek Focus Area and in the Beaver Run Focus Area. These small patches of habitat generally occur as part of larger calcareous wetland complexes that include shrub and forested swamp, dwarf shrub bogs, marsh, and beaver ponds. They are commonly found in open wet meadow habitats associated with agricultural uses such as livestock grazing and haying. We will protect up to five bog turtle population analysis sites (PAS) in the expansion area, working toward achieving one of the recovery objectives for the Wallkill River subunit. Bog turtles serve as a keystone species for habitats that are important to a diverse assemblage of species, including state-listed invertebrates, birds, amphibians and reptiles.

Indiana Bats

The refuge first conducted mist net surveys for Indiana bats in August 2008. Surveyors found three Indiana bats, including one post-lactating female and one juvenile, which indicates the presence of a maternity colony nearby. The refuge had previously suspected the presence of Indiana bats, in part because they have been documented in several nearby locations. A maternity colony was found in the summer of 2007 in Wantage, about 2.25 to 4 miles from refuge lands; and since the mid-1990s, Indiana bats have been known to hibernate in three areas near Hibernia, N.J., about 20 miles south of the Wallkill River refuge. Also, the bats' summer focus area—where bats could potentially occur between April 1 and September 30—includes the entire refuge. Furthermore, the refuge provides riparian, forested and upland habitat types typically used by Indiana bats in summer for roosting and foraging.

Other Threatened and Endangered Species

Similar to the bog turtle and the Indiana bat, the dwarf wedgemussel and Mitchell's satyr butterfly are identified in the New Jersey Wildlife Action Plan (WAP) as "wildlife of greatest conservation need" in the Skylands Region, where the refuge is located. The Papakating Creek Focus Area contains potential habitat for the federal-listed endangered dwarf wedgemussel. The New Jersey WAP identifies the dwarf wedgemussel as a "species of greatest conservation need" in the Kittatinny Valley. State biologists have surveyed refuge lands for dwarf wedgemussels. Although that species has not been found on the refuge, habitat conditions are optimal for introducing it.

Two well-known sites in Sussex and Warren counties recently supported the Mitchell's satyr butterfly (USFWS 1998). The expanded refuge is located in Sussex County, and Warren County is immediately south of it. The confirmed sites are both fens, located in areas of limestone bedrock, the same habitat type bog turtles use on the refuge. The recovery plan goal for New Jersey is to establish one metapopulation.

The small-whorled pogonia is a plant that occurs in upland sites in mixed-deciduous or mixed-deciduous coniferous forests in second- or third-growth successional stages. Two confirmed extant sites of the plant are in Sussex County, New Jersey. The long-term goal for the species is to delist it by ensuring its long-term viability.

State-listed species

The Kittatinny Valley supports 13 state-listed endangered, 16 state-listed threatened and 77 species of special concern and regional priority, in addition to five game species of regional priority and three nongame fish species currently without state or regional status. The state-listed endangered species are the American bittern, northern goshawk, northern harrier, red-shouldered hawk, sedge wren, vesper sparrow, and blue-spotted salamander. The state-listed threatened species are the barred owl, black-crowned night-heron, bobolink, Cooper's hawk, grasshopper sparrow, long-eared owl, red-headed woodpecker, savannah sparrow, wood turtle, long-tailed salamander, eastern lamp mussel, triangle floater, and silver-bordered fritillary. Wildlife of special concern in the valley are colonial waterbirds, forest passerines, freshwater wetland birds, grassland birds, shrub-scrub birds, reptiles, amphibians, and mollusks.

Contributes to Habitat Goals

Our plan will contribute to several national habitat directives or initiatives. The migratory bird species' already described are priority species under the North American Waterfowl Management Plan, Partners in Flight Plan, and/or the Regional Birds of Conservation Concern List. Our plan will ensure that migratory bird habitat in the wetlands and uplands of the Kittatinny Valley is protected in perpetuity. Many other birds of high conservation concern will benefit as well. The LPP explains in more detail how our plan meets the objectives of these national directives and initiatives.

Provides Habitat Connections

This LPP involves cooperating with our conservation partners, all of whom are instrumental in helping us accomplish habitat management goals and objectives. In July 2005, the Service met with representatives from the State of New Jersey, The Nature Conservancy, the Trust for Public Land, New Jersey Audubon Society, New Jersey Conservation Foundation, Morris Land Conservancy, and municipal, county and state officials to discuss and define the role each agency could play in protecting wildlife habitats in the Kittatinny Valley. Each partner uses its agency's individual mission statement to focus its land protection. Taken together, those mission statements cover the protection of farmland, threatened and endangered species, scenic areas, grassland habitats, and open space that the local community has identified as significant.

After each agency outlined its areas of protection interest on a map, we identified more than 61,743 acres worthy of protection in the Kittatinny Valley and surrounding uplands (see LPP for map). The Service will focus its presently limited resources on 9,550 acres, or 15 percent of that total area. Those 9,550 acres are the most critical for maintaining the biological integrity, diversity and environmental health of the present refuge. They lie adjacent to the original approved refuge acquisition boundary, and encompass the 15-mile Papakating Creek, the main tributary of the Wallkill River. In addition, the expansion area offers tremendous wetland resource values; it is a key corridor connecting the preserved habitats on the Kittatinny Ridge to the west and Pochuck Mountain to the east. It encompasses current or historic habitat sites for the federal-listed threatened bog turtle. Our expansion plan, together with our partners' commitment to protect the remaining 52,193 acres in the larger Kittatinny Valley and surrounding uplands, will enable us to maximize the potential of the valley to function as a viable ecosystem.

The New Jersey WAP states specifically that the Wallkill River refuge is an area of conservation opportunity, with its ability to link the low-lying valley habitat with the already protected upland forests. Expanding the refuge boundary also offers the opportunity to protect rare habitats in the larger Skylands Region, identified in the New Jersey WAP. Almost half of the acreage in the Skylands Region (625,000 acres) is upland forest. Only 8 percent (106,000 acres) is forested wetland, and 3 percent (36,000 acres) is emergent wetland. The state identified more than 56,000 acres of forested wetlands and 7,000 acres of emergent wetlands that need protection in that region. The LPP will help achieve the State's land protection goals.

Table G.4. Habitat types of protected lands in the Skylands Region.

Habitat Type	Acres
Grassland	1,145
Early Successional	14,755
Forested Wetland	29,727
Non-Forested Wetland	8,963
Forested Upland	147,571
Open Water	12,126
Other	7,266
Cropland/Pastureland	45,693
Total protected lands	267,245

Many of the organizations with whom we are collaborating have already protected key habitats in the Kittatinny Valley and its environs. The New Jersey Natural Lands Trust owns several parcels in the Wallkill River watershed, including the Crooked Swamp Caves Preserve and the Wallkill River Preserve. The Hamburg Mountain Wildlife Management Area, Stokes State Forest, and High Point State Park are all state-protected lands directly adjacent to the habitat complex. The Appalachian Trail skirts the northern part of that complex. The New Jersey Division of Parks and Forests and the National Park Service own a buffer of land along the trail. The Nature Conservancy owns and manages one preserve, Sussex Swamp, and also has management agreements with several public and private landowners in the valley.

Promotes Biological Integrity and Diversity

In the late 1980s, the State of New Jersey and the federal government began to recognize the national significance of wildlife habitats along the Wallkill River. With resources tight and evolving community recognition of open space and ecology, initiatives aimed at protecting the river and surrounding valley began to take form. Issues related to migratory birds (i.e., the decline of duck species), the federal listing of the bog turtle as endangered in 1997, and water quality, elevated to a national level the political and resource management understanding of what is now the refuge.

Since Congress established the refuge in 1990, the Service has been protecting the river, its surrounding habitats and bog turtles. As development continues to move into the area, the growing block of unfragmented habitat on the refuge has become better known as an important regional asset. Furthermore, management actions by the Service have resulted in habitat enhancements that support greater numbers of migratory waterfowl and shorebirds and improve water quality and aquatic habitats. Biological surveys conducted by the Service have resulted in the documentation of more than 220 bird species, the location of various bog turtle and Indiana bat populations and habitats, and a regional resource for invasive species information and management. Refuge data is now a significant part of biological studies in both New Jersey and New York. The new state wildlife plans also tap into refuge databases, and provide a new avenue for professional interaction.

The expansion provides the only “green” corridor between the Kittatinny Ridge and the Hudson Highlands. Crossing the more populated valley, this refuge expansion will protect many of the wildlife populations that depend on the genetic variability offered by the subpopulations on each ridgeline. By addressing the Wallkill River and its protection priorities, the Service will contribute in protecting the biological integrity and diversity of an important wildlife corridor in northwest New Jersey and the New York–New Jersey–Pennsylvania region.

Invests in Healthy Lands

Staff from our New Jersey Field Office completed a contaminants assessment protocol (CAP) for the Wallkill River refuge in 1999, and updated it in 2005. Starting in Sparta, N.J., the river flows north through Hardyston, Franklin and Hamburg before entering the refuge. The dominant contaminant pathways revealed in the CAP are the Papakating Creek and the Wallkill River. A number of industrial activities have occurred upstream from the refuge, especially along the Wallkill River. Papakating Creek and its tributary, Clove Brook, drain the area around Sussex before entering the southwest side of the refuge. Those two waterways then converge into the Wallkill River. Agricultural activities in the Papakating Creek watershed have contributed to notable, but not alarming, issues involving coliform bacteria, sedimentation, arsenic and phosphorus. Sussex Borough is the largest center of population close to the refuge. All of the Papakating’s tributaries have the potential to contribute contaminants to the refuge’s aquatic systems.

Pursuant to the water quality standards of the state and the purposes of the refuge established by Congress, the Service petitioned the New Jersey Department of Environmental Protection to upgrade the Category 2 anti-degradation designation of the Wallkill River to Category 1, which would forbid the degradation of its water quality. Although the state denied that request, it funded the development of the Wallkill River Watershed Plan. The refuge works closely with the Wallkill Watershed Management Group, the organization created as a result of the watershed plan, to sample and monitor the water quality in the river.

Level 2 pre-acquisition contaminants surveys must be considered on a case-by-case basis for the expansion area, because of historic agricultural uses that pose the threat of contamination. Other historic uses, such as mining and quarrying, could result in contamination by mine spoil, although that risk is low. If managed correctly, the refuge could increase the health of the lands in the expanded refuge.

Other Considerations

Acquisition Authority and Sources of Funding

The refuge has acquired lands under the authority of the Migratory Bird Conservation Act of 1929, the Refuge Recreation Act, the Transfer of Certain Real Property for Wildlife Conservation Purposes Act, and the Emergency Wetlands Resources Act of 1986. Because the Refuge Recreation Act also authorizes the acquisition of lands for endangered and threatened species, we do not believe additional authorization is necessary to acquire the lands in our LPP.

Acquisitions for the refuge have been funded with monies from the Land and Water Conservation Fund and from the Migratory Bird Conservation Commission. As of Fiscal Year 2006, 3,672 acres in the original approved refuge acquisition boundary were purchased with funds from the Land and Water Conservation Fund and 1,305 acres were purchased with funds from the Migratory Bird Conservation Commission. About 130 acres were donated. We expect land acquisition in the expansion boundary to be funded in a manner similar to land acquisition in the original approved refuge acquisition boundary.

Ownership, Acquisition Method, and Acquisition Costs

We have not acquired 93 ownerships in the original approved refuge acquisition boundary. Of those, other entities permanently protect 17: New Jersey Green Acres, the County Farmland Protection Program, or the local municipality. That leaves 76 ownerships, or approximately 1,200 acres, that lack permanent protection in the current refuge boundary. We are now negotiating to protect nine ownerships, or 250 additional acres.

Although we expect that most landowners would want to sell all interests in their lands, we plan to acquire only the minimum interest necessary to manage the lands. We will pursue less-than-fee acquisition methods (e.g., a conservation easement) during negotiations, if mutually agreeable, and we are confident we can accomplish our management objectives with less than full ownership.

Approximately 500 ownerships lie in the expansion area. We estimate the cost of acquiring those 9,550 acres at \$54.48 million. We base that figure on the acquisition in full fee simple of 4,763 acres of wetlands at a cost of \$3,500/acre (\$16.67 million), and acquiring easements on 4,585 acres of uplands at an 80 percent cost of \$10,000/acre (\$36.68 million). We will acquire the remaining 197 acres in either fee or easement (\$1.13 million), and will need an additional \$3.5 million to purchase the privately owned inholdings within the original approved refuge acquisition boundary.

Financial Strategy—Annual Operating and Maintenance (O&M), Staffing, and Refuge Operating Needs (RONs) Projects

Our plan assumes the Service will acquire a number of structures, most of which will not support the refuge or Service mission and will be slated for demolition. Structures we are likely to obtain include single-family homes and farm buildings. Some buildings that are in excellent condition could be used for refuge quarters, equipment storage or a visitor contact facility, although we did not identify that as an objective in the final CCP. Although we have not accomplished a facilities survey on all 9,550 acres in our LPP, we expect, on average, to demolish one building for every four parcels we purchase in fee. We will handle the parcels we obtain by easement on a case-by-case basis. The most cost-effective way to remove a structure is usually for the staff or a contractor to demolish it. Tables G.5 and G.6 below show the anticipated costs. We have also identified the costs associated with posting signs for boundaries and seasonal closures. We identify the contaminant costs as Level 1 surveys for most

parcels, although we recommend some soil testing because of the possibility of contamination from previous land uses such as agriculture. Although we do not anticipate acquiring any contaminated sites, they would require substantial funding for remediation.

Adding new lands to the refuge will result in additional public use opportunities and costs to the refuge. In the expansion area, we plan to add approximately five parking areas, five fishing access points, three trails, and five observation areas. The refuge will also open approximately 6,500 acres of land for hunting.

Funding to support minimum operations will be diverted from other refuges in the refuge complex. The final CCP plans for a staff of five full time employees to meet the refuge's approved management requirements in the expanded refuge. If the refuge acquires all the new lands identified in the LPP, approximately 30 percent of staff time will be used to manage and protect the new areas.

Table G.5. One-time Costs Associated with Operating and Maintaining Lands in the LPP.*

Estimated <u>One-Time</u> Operating Costs	Costs in Dollars
Establish new impoundments north of Liberty Marsh	\$250,000
Post informational, regulatory, boundary signs	\$65,000
Demolition of houses/small buildings	\$5,000 to 15,000 per building
Demolition of barns	\$20,000 to \$75,000 per barn
Contaminant (level 1) studies and soil testing	\$10,000 to \$20,000
Construction of public use sites (trails, blinds)	\$170,000
Construction/improvement of parking areas	\$40,000
New kiosks/exhibits	\$50,000
Total Estimated One-Time Operations Cost	minimum of \$595,000 plus demolition costs

* These costs assume the full implementation of the final CCP.

Table G.6. Annual Costs Associated with Operating and Maintaining Lands in the LPP.*

Estimated <u>Annual</u> O&M Costs	Costs in Dollars
Waterfowl impoundment maintenance and management	\$5,000
Habitat inventories	\$25,000
General maintenance of public use facilities	\$5,000
Mowing and Grazing Informational, regulatory, and boundary signs	\$20,000
Total Estimated Annual O&M Cost	\$55,000
Estimated Annual Refuge Revenue Sharing Payment	\$90,000

* These costs assume the full implementation of the final CCP.

Public Attitude, Involvement, and Potential Partners

The supporters of refuge expansion include Senators Frank Lautenberg and Robert Menendez of New Jersey and Senators Charles Schumer and Hillary Clinton of New York; Representatives Scott Garrett (N.J. 5), Maurice Hinchey (N.Y. 22), and John Hall (N.Y. 19); Governor Jon Corzine of New Jersey, and Governor David Paterson of New York; the New Jersey Department of Environmental Conservation; the New York Department of Environmental Conservation; both state's fish and wildlife agencies; Sussex County in N.J., and Orange County in N.Y.; the townships of Vernon, Wantage, Lafayette, Hardyston and Frankford in N.J., and Warwick and Minisink in N.Y.; a number of prominent conservation partners, including the Friends of the Wallkill River refuge, The Land Conservancy of New Jersey, Ducks Unlimited, Trust for Public Land, N.J. Audubon, Wallkill Watershed Management Group, and The Nature Conservancy; and the public. Because open space is a major issue in the region, developers and conservationists alike recognize the refuge role in preserving habitat (and, in many cases, enhancing property values). That recognition surfaced in our public scoping for the CCP, our meetings with those individuals and groups, and our contacts with elected officials and their staffs.

By establishing and joining many valuable partnerships, we have enhanced our ability to protect and manage wildlife and habitats along the Wallkill River and its tributaries. Partners are integral in most refuge programs. Our partners assist us in activities including environmental education and interpretive programs, land acquisition, public relations, habitat evaluations, species inventories, nest site monitoring, and habitat restoration. In addition, a growing volunteer program supports refuge projects.

Due to the cyclical nature of funding for government agencies, land protection among public agencies and private organizations is vital for accomplishing refuge goals. Many people believe the only way to protect what is left of rural New Jersey for all parties—private owners, federal, state, and local agencies, and private organizations—is to join in partnerships and pool resources to accomplish common conservation goals. There is a great deal of support for an approach that focuses on voluntarily working together in the spirit of cooperation, combining resources, sharing information, keeping people informed, and simply being good neighbors. Our plan is fully consistent with that approach.

Public Use

Collaborating can also help us provide high quality, wildlife-dependent, public use opportunities. Non-consumptive uses such as environmental education are excellent stages to grow and showcase partnerships. In addition, local hunting groups, fishing groups and birding groups work with the refuge on a continuing basis. We pursue opportunities as much as possible, given the limited resources of the refuge.

The final CCP projects a 15 percent increase in visitation on the refuge (approximately 36,000 people) over the next 15 years. That increase will result from the new trails, parking areas, boat ramps, fishing accesses, interpretive overlooks and observation platforms planned in the CCP.

We will allow public access for appropriate and compatible daytime uses on many of the newly acquired lands outside the sensitive bog turtle and bird nesting habitats. Generally, we will allow hunting, based on the New Jersey State seasons, on newly acquired lands, consistent with the refuge Annual Hunt Plan. We will allow fishing and canoeing or kayaking along the Papakating Creek and Wallkill River. Working with state and local agencies, we will study the feasibility of converting an abandoned railroad bed into a multi-use trail. The refuge will also continue its limited interpretive and environmental education programs and increase partnership opportunities to interpret the refuge and the watershed.

Bibliography and References

Dettmers. 2000. Personal communication.

U.S. Fish and Wildlife Service. 1998. Recovery Plan for Mitchell's Satyr Butterfly *Neonympha mitchellii* French (Lepidoptera: Nymphalidae: Satyrinae). http://ecos.fws.gov/docs/recovery_plans/1998/980402.pdf

U.S. Fish and Wildlife Service. 2001. Bog Turtle (*Clemmys muhlenbergii*), Northern Population, Recovery Plan. Hadley, Massachusetts. 96 pp.

Appendix H

USFWS



Biological staff conduct a variety of surveys each year.

Intra-Service Section 7 Biological Evaluation Form

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person:

Beth Goldstein, Refuge Planner
U.S. Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035

Telephone Number: (413) 584-2634

Date: May 27, 2008

- I. Region:** R5
- II. Service Activity (Program):** Service-preferred Alternative B from the Wallkill River National Wildlife Refuge draft Comprehensive Conservation Plan and Environmental Assessment (draft CCP/EA)
- III. Pertinent Species and Habitat:**
- A. Listed species and/or their critical habitat within the action area:**
- Bog Turtle (*Clemmys [Glyptemys] muhlenbergii*)
Indiana Bat (*Myotis sodalis*)
Dwarf Wedgemussel (*Alasmodonta heterodon*)
Mitchell's Satyr Butterfly (*Neonympha mitchellii mitchellii*)
Small-whorled Pogonia (*Isotria medeoloides*)
- B. Proposed species and/or proposed critical habitat within the action area:**
- None
- C. Candidate species within the action area:**
- None
- D. Include species/habitat occurrences on a map.**
- The New Jersey Field Office has these maps.
- IV. Geographic area or station name and action:** Wallkill River National Wildlife Refuge, Sussex, New Jersey
- V. Location:** See attached map H-1
- A. Ecoregion Number and Name:** 37/Hudson River/New York Bight
- B. County and State:** Sussex County, New Jersey and Orange County, New York
- C. Section, township, and range (or latitude and longitude):** Vernon, Wantage, Hardyston and Frankford Townships in New Jersey and towns of Warwick and Minisink in New York
- D. Distance (miles) and direction to nearest town:** 3 miles east of Sussex Borough

E. Species/habitat occurrence:

A variety of habitats, including red maple swamps, calcareous fens, wet meadows, old fields, and oak-beech forests are found throughout the refuge. The refuge's acquisition boundary encompasses 7,500 acres and follows roughly 9 miles of the Wallkill River from New Jersey Route 23 north to just above the New Jersey-New York State Line. As of January 2006, the Service had purchased approximately 5,000 acres within the approved acquisition boundary.

When acquisition is complete, the refuge will protect approximately 4,200 acres of freshwater wetlands and 3,300 acres of adjacent upland. Wetland habitat types include 1,600 acres of palustrine forest, 1,500 acres of emergent marsh, 600 acres of wet meadow, 400 acres of scrub-shrub marsh, and 100 acres of open water. Upland habitat types include 2,500 acres of agricultural land and 800 acres of mixed hardwood forest. Grasslands are the refuge's dominant upland habitat type with approximately 1,800 acres in grassland and old field.

A total of 225 species of birds occur on the refuge, including 19 species of waterfowl, 35 species of waterbirds, 24 species of raptors, and 125 species of songbirds. The Wallkill River bottomland is one of the few, large areas of high quality waterfowl habitat remaining in northwestern New Jersey.

The refuge's population of mammals is diverse. It includes bats, beavers, muskrats, river otters, minks, red foxes, gray foxes, coyotes, white-tailed deer, and black bears. The Wallkill River valley provides some of the best remaining habitat for amphibians and reptiles in the Northeast. The Wallkill River itself provides an excellent warm-water fishery.

VI. Description of proposed action

The draft CCP/EA evaluates three alternative scenarios for managing the refuge over the next 15 years. The CCP Planning Team and the NWRS Senior Leadership Team have identified alternative B as the Service-preferred alternative. One of the biological priorities in the CCP is to restore forested and non-forested wetlands by allowing the riparian corridor along the Wallkill River to reforest and by plugging ditches. The refuge would also give priority to managing early successional and grassland habitat.

Alternative B proposes to add a total of 9,550 acres to the existing, approved refuge boundary. This acreage includes the Papakating Creek Focus Area which encompasses a major tributary to the Wallkill River; and includes significant wetlands associated with bog turtle habitat. Other important habitats in the proposed expansion area include forested and emergent wetlands, large grassland complexes, upland forests, floodplain forests, and farmlands that are regionally important for migratory waterbirds, waterfowl, raptors, grassland birds, and rare reptiles. Rare calcareous wetlands are also present in some of the areas proposed for inclusion in the current boundary.

Below are specific descriptions of the listed species that could potentially be affected by alternative B of this draft CCP/EA. Page numbers are provided to direct the reviewer to the appropriate sections in the draft CCP/EA that discuss actions that could potentially affect these species. We are seeking informal consultation on alternative B.

Bog Turtle (*Glyptemys [Glyptemys] muhlenbergii*)

The bog turtle is the only federal-listed species known to be present on the Wallkill River refuge. One active site is on Service-owned land, one active site is on private land in the original acquisition boundary, and an estimated 10 sites suitable for supporting the turtle lie within the current acquisition boundary: some on Service-owned land and some on inholdings. Between 2002 and 2006, the refuge biologist surveyed the one known bog turtle site as well as numerous potential sites within the acquisition boundary. Four turtles found at one site were marked with radio transmitters. The use of radio telemetry aided in monitoring population trends, detecting signs of recruitment and reproduction, tracking seasonal movements and determining home range.

In 2005 and 2007, Dr. Kurt Buhlmann of the University of Georgia surveyed 15 potential bog turtle sites within the refuge acquisition boundary. No turtles, other than the four at the one known site, were found on any of those sites. Additional turtles were located within the refuge acquisition boundary, but not on refuge-owned land. After analyzing his data from 2005 and 2007, Dr. Buhlmann will provide the refuge with a freshwater turtle management plan. In addition, he will work with the refuge to further analyze bog turtle habitats within its boundaries, and on possible reintroductions of the bog turtle.

One of the greatest threats to bog turtles is the loss of long-lived, wild, adult animals to a lucrative, illegal wildlife trade (USFWS 2001). Another serious threat is the continued loss, alteration or fragmentation of the highly specialized species' wetland habitat.

The overall objective in the recovery plan is to protect and maintain existing populations of this species and its habitat, enabling its eventual removal from the federal list of endangered and threatened wildlife and plants (USFWS 2001). The plan identifies five bog turtle recovery units and their subunits. The refuge lies in the Hudson River/Housatonic Unit, Wallkill River Watershed Subunit. Strategies in the draft CCP/EA follow the recovery plan's recommendations of tasks that, eventually, will lead to the delisting of this species. Those recommendations include the following strategies found on pp. 3-16 through 3-17 of the draft CCP/EA that are already being implemented on the refuge.

- Work with the New Jersey and New York FWS Field Offices and with the states of New Jersey and New York to adequately screen projects/permits that may affect bog turtles and their habitats on and near the refuge, and to improve the effectiveness of regulatory reviews in protecting bog turtles and their habitats, specifically to address agencies working at cross purposes when permitting activities in wetlands.
- Conduct surveys of known, historical and potential bog turtle habitat.
- Monitor the status of and threats to populations and habitat, including changes in hydrology, encroachment of development, successional changes, and the introduction and spread of invasive native and exotic plants. Monitor population trends, signs of recruitment and reproduction, seasonal movements, and home range using methods such as radio telemetry, trapping and foot searches.
- Continue efforts to acquire the one known bog turtle site on private lands within the current refuge boundary.
- Deter the poaching of bog turtles by conducting routine and random site visits.
- Control invasive plants and set back succession by using biological control agents, girdling red maple stems, grazing goats or other livestock, and mowing or mulching.
- Allow beaver ponds to progress through natural stages of succession to provide potential bog turtle habitat, where beaver populations do not conflict with private landowners or public roads.

The additional strategies proposed in alternative B can be found on page 3-40 of the draft CCP/EA, and include the following.

- Develop a site management and monitoring plan for occupied sites on Service-owned lands.
- Use surveys to effectively monitor the status of bog turtles at known sites.
- Re-evaluate the presence of turtles at historical locations.
- Locate additional sites for conservation and recovery within the proposed expanded boundary.

Indiana Bat (*Myotis sodalis*)

The refuge first conducted mist net surveys for Indiana bats in August 2008. Surveyors found three Indiana bats, including one post-lactating female and one juvenile, which indicates the presence of a

maternity colony nearby. The refuge had previously suspected the presence of Indiana bats, in part because they have been documented in several nearby locations. A maternity colony was found in the summer of 2007 in Wantage, about 2.25 to 4 miles from refuge lands; and since the mid-1990's, Indiana bats have been known to hibernate in three areas near Hibernia, N.J., about 20 miles south of the Wallkill River refuge. Also, the bats' summer focus area - where bats could potentially occur between April 1 and September 30 - includes the entire refuge. Furthermore, the refuge provides riparian, forested and upland habitat types typically used by Indiana bats in summer for roosting and foraging.

The strategies related to Indiana bats can be found on page 3-41 of the draft CCP/EA. They include working with the New Jersey Field Office to hire a private contractor to conduct mist net surveys for Indiana bats on Service-owned lands and in the expansion area. Since Indiana bats were found, the refuge plans to implement recovery tasks. We also propose to collaborate with Great Swamp refuge to recruit students to conduct research on Indiana bats on Service-owned lands. Students could study the various life cycles of the bats, such as when and where they forage, hibernate and roost.

Dwarf wedgemussel (*Alasmidonta heterodon*)

The Wallkill River refuge includes potential habitat for the dwarf wedgemussel. Our New Jersey Field Office started surveys of the Wallkill River in August 2000, but found no mussels. Additional surveys are needed to fully determine their presence, absence, or the possibilities for their introduction. One of the mussel's host fish, the tessellated darter (*Etheostoma olmstedii*), was observed during the 2000 survey. The strategies that relate to the dwarf wedgemussel can be found on page 3-41 in the draft CCP/EA; they include the following: determine the feasibility of re-establishing populations of dwarf wedgemussel within that species' historic range and, if feasible, introduce it into those areas; and, collaborate with local colleges and universities to aid the refuge with research on dwarf wedgemussels.

Mitchell's Satyr Butterfly (*Neonympha mitchellii mitchellii*)

Mitchell's satyr butterfly was listed by the Service as an endangered species in 1992. The majority of the current and historic population sites are clustered in southern Michigan and adjacent northern Indiana, but some isolated populations historically were present in northern New Jersey. Two well-known sites within Sussex and Warren counties supported the species in the recent past. The refuge is located in Sussex County. Strategies related to Mitchell's Satyr butterfly can be found on page 3-41 and include surveying for the butterfly on Service-owned lands in appropriate habitats, such as calcareous fens.

Small-whorled pogonia (*Isotria medeoloides*)

The small-whorled pogonia is a sparse but widely distributed plant that is a member of the orchid family. The plant's primary range extended from southern Maine and New Hampshire through the Atlantic Seaboard states to northern Georgia and southern Tennessee (USFWS 1992). The plant was listed as endangered in 1982 and then reclassified as threatened in 1994. The plant grows in upland sites in mixed-deciduous or mixed deciduous coniferous forests that are generally in second- or third-growth successional stages (USFWS 1992). Two extant sites of the plant are confirmed in New Jersey, and both are in Sussex County, where the refuge is located.

VII. Determination of effects:

A. Explanation of effects of the action on species and critical habitats in items III. A, B, and C (attach additional pages as needed):

Bog Turtles

In alternative B we protect bog turtle sites by owning them and managing them for high-quality bog turtle habitat. We also propose to expand the refuge boundary by 9,550 acres, creating the potential to protect at least 10 more bog turtles sites within the Papakating Creek area.

We predict no adverse impacts on bog turtles from implementing alternative B for the following reasons.

- When conducting habitat management techniques, such as girdling red maple stems and grazing, we would adhere to biological opinion.
- The biological agents we would use to control invasive plants in bog turtle habitat would be species-specific and therefore would affect only the targeted, unwanted vegetation. They would have no affect on desired plant species at bog turtle sites, such as tussock sedge.
- The foot traffic of refuge staff monitoring bog turtles and their habitat and managing vegetation would not cause adverse effects at those sites because we would keep foot traffic and equipment hauling to a minimum to protect the seep vegetation. We would not drive vehicles, ORVs, or heavy equipment on turtle sites.
- Foot traffic from cross-country skiers, snowshoers and hunters would likely not adversely affect bog turtles because the turtles generally hibernate from late September through April, when most of the skiing, showshoeing and hunting seasons occur.

Indiana bat, Dwarf wedgemussel, Mitchell's satyr butterfly and Small-whorled pogonia

Although we do not know whether any of these species live on the refuge, the actions proposed in alternative B would only enhance habitats used by these species.

Habitat management actions proposed in alternative B of the draft CCP/EA will complement the habitat needs of Indiana bats by increasing forested habitats, particularly along the riparian corridor that buffers the Wallkill River.

Strategies to work with partners to improve water quality would benefit the dwarf wedgemussel, as would the proposal to expand the refuge to include the Papakating Creek, which contains potential habitat for this species. We would undertake individual consultation for reintroduction or surveys of dwarf wedgemussel.

Strategies to manage and protect bog turtle habitat would also benefit the Mitchell's satyr butterfly, since these two species use similar habitat types.

Increasing core patches of upland mixed forested habitat would benefit the small-whorled pogonia, which uses this habitat type.

We predict no adverse impacts on any of these species from implementing alternative B because, to our knowledge, these species are not present on the refuge. Also, our general refuge management would continue to maintain habitat components important to major portions of the species' life cycles.

In addition, we predict no adverse impacts to any of the above species from mosquito control on the refuge. The refuge conducted an Intra-Service Section 7 Biological Evaluation in 2006 that found mosquito control to have no adverse effect on bog turtle populations. Because the special use permit with the Sussex County Office of Mosquito Control does not allow the use of insecticides (adulticides) to control adult mosquitoes on the refuge, there would also be no effects on the Mitchell's satyr butterfly or the adult stages of the insect prey base of any Indiana bats that might forage on the refuge in the future. When it is necessary to conduct mosquito control on the refuge, the Service will coordinate with the Sussex County Office of Mosquito Control to ensure that we take all measures to minimize the potential harm to those species, if present.

B. Explanation of actions to be implemented to reduce adverse effects: N/A

VIII. Effect determination and response requested: [* = optional]

A. Listed species/designated critical habitat:

Determination

Response requested

no effect/no adverse modification
[species: Mitchell's Satyr Butterfly
(*Neonympha mitchellii mitchellii*), Small-
whorled pogonia (*Isotria medeoloides*) and
dwarf wedgemussel (*Alasmodonta heterodon*)]

____ *Concurrence

may affect, but is not likely to adversely
affect species/adversely modify critical habitat
[species: Bog Turtle (*Clemmys [Glyptemys]
muhlenbergii*) and Indiana Bat (*Myotis sodalis*)]

~~____~~ Concurrence

may affect, and is likely to adversely
affect species/adversely modify critical habitat
(species: _____)

____ Formal Consultation

B. Proposed species/proposed critical habitat:

Determination

Response requested

no effect on proposed species/no adverse
modification of proposed critical habitat

(species: _____)
____ *Concurrence

is likely to jeopardize proposed species/
adversely modify proposed critical habitat

(species: _____)
____ Conference

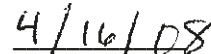
C. Candidate species:**Determination****Response requested**no effect
(species: _____)

____ *Concurrence

is likely to jeopardize candidate species
(species: _____)

____ Conference


 Project Biologist (Requestor)


 Date
IX. Reviewing ESFO Evaluation:A. Concurrence X Nonconcurrence _____


B. Formal consultation required _____

C. Conference required _____

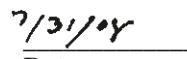
D. Informal conference required _____

E. Remarks (attach additional pages as needed):

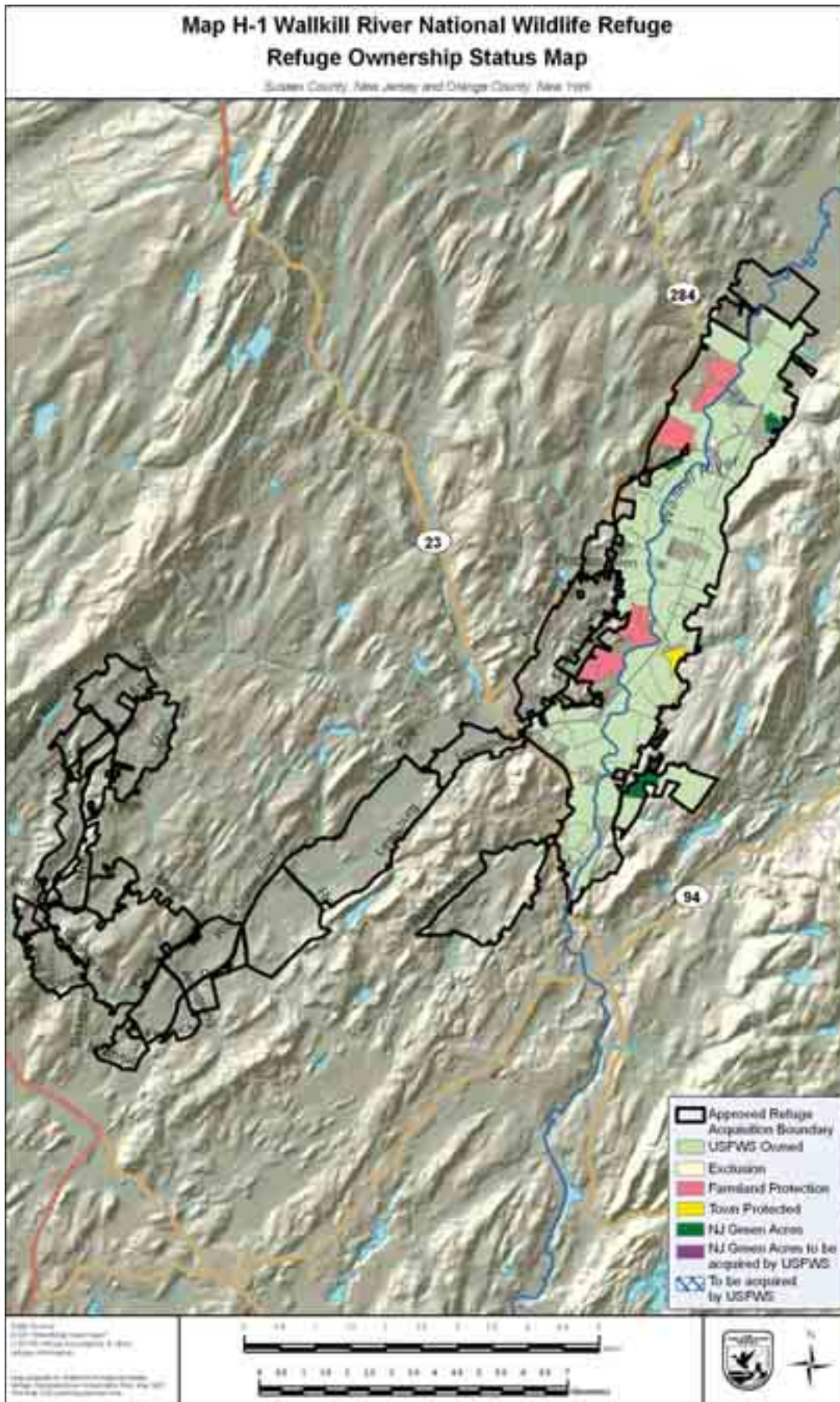

 Endangered Species Biologist (Reviewer),
 New Jersey Field Office


 Date


 Assistant Supervisor, New Jersey Field Office


 Date
Literature Cited

- U.S. Fish and Wildlife Service. 1992. Small-whorled Pogonia (*Isotria medeoloides*) Recovery Plan, First Revision. Newton Corner, Massachusetts. 75 pp.
- U. S. Fish and Wildlife Service. 2001. Bog turtle (*Clemmys muhlenbergii*), Northern Population, Recovery plan. Hadley, Massachusetts, 103 pp.



Appendix I

Mao Lin/USFWS



Wallkill River National Wildlife Refuge headquarters in Sussex, New Jersey

Consultation and Coordination with Others

- Background
- Public Involvement Summary/Reaching out to the Public
- Release of Draft CCP

Background

We started preplanning for a single CCP/EA for both the Wallkill River and Shawangunk Grasslands national wildlife refuges in late fall of 1998. Later, in November 2002, we decided to write separate plans for each refuge. We selected the Shawangunk Grasslands refuge as our first priority.

Our planning team, which consisted of Service employees and employees of the states of New York and New Jersey, first met in February 1999 to get acquainted with the planning process and start collecting information about the natural resources and public uses on both refuges. We developed vision statements and preliminary goals for both refuges, and identified preliminary issues and management concerns.

Early in 1999, we compiled a mailing list of about 3,000 groups, elected officials, state agencies, adjacent landowners, and other individuals to ensure that we would be contacting a broad sample of the affected public as our planning progressed. In spring 1999, we mailed them an issues workbook that solicited written comments on refuge management topics. We also distributed the workbooks at refuge headquarters and offered them at every public function refuge staff attended.

Of the more than 3,000 workbooks we distributed, the public completed and returned 337. Their responses on managing wildlife habitat, providing public use, protecting land, and playing a role in neighboring communities strongly influence the way this final CCP addresses issues of concern for protecting resources and providing compatible, wildlife-dependent, recreational use. Please note that our workbook questions apply to both refuges; we cannot differentiate responses that may apply to only one.

In May and June 1999, we invited the public to seven open houses: two in Sparta, N.J.; two in Vernon, N.J.; two in Wallkill, N.Y.; and one in Warwick, N.Y. We advertised them in news releases, radio broadcasts, and notices to our mailing list. More than 50 people attended. We also organized several separate meetings to discuss specific issues with our conservation partners and state agencies (see below).

In October 1999, we released our “Fall 1999 Planning Update.” It summarized the public comments we received in the planning workbook and the open houses, identified the key issues the CCP/EA would address, and shared our revised vision statements and goals for the refuge with everyone on our mailing list.

Once we finalized the key issues, we began to develop alternative strategies to address each one. The fully developed management alternatives in chapter 3 of the draft CCP/EA evolved from those strategies, public comments, and the refuge purposes and goals. We shared our proposed alternatives in follow-up meetings with our conservation partners, state agencies and the public in 2000.

We shared those revised goals and highlights of the draft alternatives for the CCP with the public in our Fall 2001 and Winter 2002 Planning Update, as well as in our September 2005 Planning Update. They provided the public with the opportunity to ask questions and make comments on the most up-to-date information.

Public Involvement Summary/Reaching Out to the Public

Meeting Our Refuge Neighbors at Open Houses

May 18, 1999

Number of non-FWS attendees: 4
Location: Sparta, N.J.

May 19, 1999

Number of non-FWS attendees: 20
Location: Vernon, N.J.

June 9, 1999

Number of non-FWS attendees: 25
Location: Wallkill, N.Y. (Ulster County)

June 17, 1999

Number of non-FWS attendees: 25
Location: Warwick, N.Y.

Updating Various Constituencies on Our Progress

March 7, 2001

Number of non-FWS attendees: 25
Location: Wallkill, N.Y.
Audience: Shawangunk-Gardiner
Historical Society

April 24, 2001

Number of non-FWS attendees: 25
Location: Wallkill, N.Y.
Audience: Wallkill Women's Club

July 11, 2001

Number of non-FWS attendees: 40
Location: New Paltz, N.Y.
Audience: Wallkill River Task Force

October 20, 2001

Number of non-FWS attendees: 10
Location: Shawangunk, N.Y.
Audience: Wallkill River Task Force

December 7, 2001

Number of non-FWS attendees: 35
Location: West Nyack, N.Y.
Audience: Rockland Audubon Society

April 13, 2002

Number of non-FWS attendees: 36
Location: Middletown, N.Y.
Audience: Edgar A. Mearns Bird Club

May 1, 2002

Number of non-FWS attendees: 16
Location: Goshen, N.Y.
Audience: Orange County Audubon
Society

September 28, 2002

Number of non-FWS attendees: 60
Location: Monticello, N.Y.
Audience: Audubon Council of NYS

October 16, 2002

Number of non-FWS attendees: 18
Location: Hackensack, N.J.
Audience: Bergen County Audubon
Society

Working Meetings with Conservation Experts

We organized working meetings in fall 1999 and 2000 to synthesize expert opinions, both inside and outside the Service, on creating effective strategies for preservation.

April 4, 1999

Outreach Activity:
Purpose:
Non-FWS attendees:
Audience:
Topics:

CCP Planning Meeting
To focus on the pre-planning stage of the CCP process
0
Nancy McGarigal, Libby Herland, Leon Latino
Budget, affected environment, open house times and locations

September 1-2, 1999

Outreach Activity:
Purpose:
Non-FWS attendees:
Audience:

CCP Planning Meeting
Update the status of the CCP for the Wallkill and Shawangunk refuges, identify key issues, discuss goals and objectives and begin listing general alternatives
0
Nancy McGarigal, Libby Herland, Carl Schwartz, Kevin Holcomb, Norman Olson, Allison Whitlock, Leon Latino, Randy Dettmers, Melissa Brewer, Jeff Shryer, Will Waldron, Shelley Hight, Joe McCauley

Topics: Archaeology, affected environment, EcoSearch, Wilderness Review, integrating migratory bird conservation, landbird conservation plans, fisheries surveys, public use, adjacent lands management, budget and staff and community relations

September 22, 1999

Outreach Activity: CCP Planning Meeting
 Purpose: Update the status of the CCP for the Wallkill and Shawangunk refuges and discuss goals and objectives for future development of the CCP
 Non-FWS attendees: 4
 Audience: Nancy McGarigal; Leon Latino; Jeff Shryer; Libby Herland; Andrew Milliken; Kevin Holcomb; John Garcia, Div Parks Land Acquisition Trenton, NJ; Dennis Miranda, NJ Conservation Fund; Susan Curry, NJ Conservation Fund Land Acquisition; Paul Stern, State Parks Service, Northern Region
 Topics: Cultural resources issues, conflicts in public use, species of concern list, communities of special concern

October 13-14, 1999

Outreach Activity: Planning Meeting
 Purpose: Update the status of the CCP for the Wallkill and Shawangunk refuges and discuss alternatives
 Non-FWS attendees: 3
 Audience: Jim Sciascia, Principal Biologist, NJDEP Fish, Game and Wildlife; Joe Penkala, Regional Superintendent, NJDEP Fish, Game and Wildlife; Ted Kerpez, Endangered Species Coordinator, NYSDEC
 Topics: Focus areas; marsh and grassland bird nesting in Wallkill; species of concern; land prioritization; public use; alternatives

June 20, 2000

Outreach Activity: EcoSearch Meeting
 Purpose: To bring everyone up to date on the status of the EcoSearch Project for Wallkill River refuge and to determine new timelines and responsibilities
 Non-FWS attendees: 0
 Audience: Tony Léger, Hank Short, Nancy McGarigal, Greg Thompson, Jay Hestbeck, Linda Shaffer, Linda Roberts
 Topics: EcoSearch deadlines; how to use EcoSearch in CCP planning

July 18-19, 2000

Outreach Activity: CCP Planning Meeting
 Purpose: Update the status of the CCP for the Wallkill and Shawangunk refuges and discuss alternatives
 Non-FWS Attendees: 0
 Audience: Nancy McGarigal, Jeff Shryer, Allison Whitlock, Kevin Holcomb, Sarah Bevilacqua, Bethany Campbell, Leon Latino, Libby Herland, Tony Léger
 Topics: EcoSearch and mapping, land acquisition, discussion of the Preliminary Project Proposal, criteria within Focus areas, public use (hunting, trails and access)

August 30-31, 2000

Outreach Activity: CCP Planning Meeting
 Purpose: Update the CCP process; discuss draft chapters of CCP
 Non-FWS Attendees: 1
 Audience: Nancy McGarigal, Leon Latino, Libby Herland, Jeff Shryer, Mike Valent, NJ T&E coordinator (attended day 2)
 Topics: Wallkill River refuge website, scheduling, chapter 1, chapter 3 and invasive, exotic and overabundant species

October 4, 2000

Outreach Activity: CCP Planning Meeting, New Jersey Focus
Purpose: Update the CCP process; discuss the draft PPP proposal
Non-FWS attendees: 6
Audience: Mike Valent, NJDEP Non-Game Program; John Garcia, NJDEP Parks and Forestry, Chief of Capital Planning and Programming; Lou Cherapy, NJDEP Parks and Forestry, Regional Superintendent; Paul Stern, NJDEP Superintendent, Northern Regional Office NJDEP Parks and Forestry; Terry Caruso, NJ Green Acres Program; Beverly Muzalla, NJ Natural Lands Trust/NJ Parks and Forestry
Topics: Various land protection programs; how to achieve cooperation; local responses to state land acquisition

December 12, 2000

Outreach Activity: CCP Planning Meeting
Purpose: Discuss PPP; chapters within CCP and assign jobs to planning team members.
Non-FWS attendees: 0
Audience: Kevin Lowry, Kevin Holcomb, Jeff Shryer, Libby Herland, Leon Latino, Nancy McGarigal
Topics: PPP, EcoSearch, sod farm management, existing EAs, alternatives chapter

March 20, 2001

Outreach Activity: CCP Planning Meeting
Purpose: Update the CCP process; discuss the draft PPP proposal and objectives.
Non-FWS attendees: 0
Audience: Nancy McGarigal, Libby Herland, Kevin Holcomb, Leon Latino
Topics: PPP update, EcoSearch, archaeological survey, members' schedules

May 24, 2001

Outreach Activity: CCP Planning Meeting
Purpose: To discuss the status of the CCP and proposed actions for land acquisition and public use
Non-FWS attendees: 2
Audience: Bob McDowell and Dave Chanda, NJDEP; Tony Léger; Dick Dyer; Libby Herland; Kevin Holcomb; Nancy McGarigal
Topics: State involvement in CCP's, Forked River Game Farm, resource protection throughout NJ, Holgate situation

July 27, 2001

Outreach Activity: CCP Planning Meeting
Purpose: Discuss planning updates, revised objectives and land acquisition planning.
Non-FWS attendees: 0
Audience: Libby Herland, Kevin Holcomb, Allison Whitlock, Nancy McGarigal, Leon Latino
Topics: Salamander and vernal pool surveys, grasslands study, land acquisition planning, planning updates

November 27-29, 2001

Outreach Activity: CCP Planning Meeting
Purpose: To involve state biologists in our planning effort for waterfowl, game management, fisheries, and land protection
Non-FWS Attendees: 2
Audience: Dave Chanda, NJDEP; Patricia Hamilton, NJDEP; Libby Herland; Steve Kahl; Kevin Holcomb; Alison Whitlock; Nancy McGarigal; Bill Archambault
Topics: Fish resources and recreational fishing opportunities; land acquisition; EA chapters 2 and 4; and discussion of next Planning Update, hunting permit program, and new compatibility determinations

May 17, 2005

Outreach Activity: CCP Planning Meeting
 Purpose: Discuss CCP issues and conduct a refuge tour for Philip Sczerzenie, focusing on areas where management proposals from the CCP will have the most impact on the environment
 Non-FWS Attendees: 1
 Audience: Beth Goldstein; Edward Henry; Kevin Holcomb, Brad Milley; Philip Sczerzenie, Mangi Environmental Group
 Topics: Chronic Wasting Disease (CWD), prescribed burning, compatibility determinations, environmental consequence chapter, restoring natural hydrology to pond behind refuge headquarters

July 20, 2005

Outreach Activity: Cooperative Land Protection Workshop
 Purpose: Presentations made by each participant on current land protection and a discussion of future land protection
 Non-FWS attendees: 13
 Audience: Mike Inganamort, Congressman Scott Garrett; Lisa Plevin, Senator Lautenberg; Mada Liebman, Senator Corzine; Pat Lynch, National Parks Service; Tom Sampson; Bill Koch; Lisa Arroyo; Mike Valent, NJDEP, DFW, ENSP; Rich Osborn, NJ Green Acres; Ingrid Vandegaer, NJCF; Terrence Nolan, Trust For Public Land; Gylla Macgregor, NJ Audubon Society; Tom Wells, The Nature Conservancy; Donna Traylor, Sussex County Farmland Preservation and Conservation; Barbara Davis, Morris Land Conservancy; Jim Doherty, Wantage; Edward Henry; Kevin Holcomb; Brad Milley; Mao Lin; Beth Goldstein; Tom Sampson; Philip Sczerzenie
 Topics: Various land protection issues as brought up by each participant included funding land protection, priorities for land protection, and how to collaborate with each other to protect lands

September 28-29, 2005

Outreach activity: CCP Planning Meeting
 Purpose: To review chapters 1 (introduction), 2 (affected environment) and part of chapter 3 (alternatives); discuss the LPP
 Non FWS attendees: 0
 Audience: Beth Goldstein, Mao Lin, Edward Henry and Kevin Holcomb
 Topics: Compatibility determinations, which actions to include in Alternative A versus in Alternative B, updates to affected environment sections, Land Protection Plan proposed acquisition boundary

December 1, 2005

Outreach activity: LPP meeting with State partners; CCP Planning Meeting
 Purpose: To present the draft LPP to State partners and ask for input
 Non FWS attendees: 15
 Audience: Attending from the State: From the Green Acres Program: Fawn McGee, Terry Caruso, Lisa Stern, Pam Their, Curt Gellerman, Rich Osborn, Liz Mataset, Larry Fink, Chrystal Clark, and Barb Fischer. From NJ Fish and Wildlife: Lisa Carben and Dave Chanda. From NJ Parks and Forestry: Paul S. Sedor (in for Lynn Fleming), and Steve Ellis, Regional superintendent of the north parks. From NJ Natural Lands Trust: Martin Rapp. From USFWS: Beth Goldstein, Edward Henry, Kevin Holcomb and Brad Milley
 Discussion topics: Update our state partners on the CCP planning on process and share with them our progress on the Land Protection Plan. Obtain feedback on the proposed expansion areas

February 2, 2006

Outreach activity: LPP meeting with Wallkill River Watershed Management Group
 Purpose: Exchange information
 Non-FWS attendees: 2
 Audience: Ernie Hofer and Nathaniel Sajdak from the Wallkill River Watershed Management Group
 Topics: The LPP Focus Area of Papakating Creek; imminent threats of development in the Wallkill River Valley; imminent threats of development in the Papakating Creek area; water quality issues; exchange GIS information such as Land Use/Land cover

February 27, 2007

Outreach activity: Land Protection Partners meeting
 Purpose: Update our partners on the CCP/LPP
 Non-FWS attendees: 23
 Audience: John Parke, NJ Audubon; Larry Herrightly, NJ Division of Fish and Wildlife; Bob McDowell, Sussex Federation; Carolyn Fefferman, Senator Menendez's Office; Tom Gravel, Trust for Public Land; Eric Olsen, The Nature Conservancy; Ken Nelson, Wantage Open Space Committee; Mim Dunn, NJ Department of Fish and Wildlife; Nathaniel Sajdak and Ernie Hofer, Wallkill River Watershed Management Group; Ted Kerpez, NY State Department of Environmental Conservation; Larry Fink and Rich Osborn, New Jersey Green Acres Program; Lewis Lain, Town of Minisink, NY; Jim Doherty, Wantage Town Manager; Lori DuBord, Congressman Hinchey's Office; Emile DeVito, NJ Conservation Foundation; Rick Jones, Orange County Department of Planning; Rich Hehmeyer, Trust for Public Land; Donna Traylor, Sussex County Farmland Preservation and Conservation; Kira Dacanay, Americorps; Congressman Scott Garrett; Dennis Miranda, Sierra Club—Northwest Group
 Topics: Draft CCP/LPP, particularly the Service's proposed alternative including the proposed refuge expansion; update on land protection priorities from our partners; discussion on how to work together to achieve common land protection objectives.

Briefing Elected Officials and Others

June 20, 2001 Representative Benjamin A. Gilman at Washington, DC.
June 20, 2001 Aides to Representative Maurice D. Hinchey at Washington, DC.
March 12, 2002 Aides to Representative Gilman at Washington, DC.
March 12, 2002 Aides to Representative Hinchey at Washington, DC.
July 30, 2002 Representative Hinchey's Chief of Staff, Paul Brotherton, at the refuge.
March 27, 2003 Steve Kahl, Kevin Holcomb and Beth Goldstein brief Ted Kerpez, Regional Wildlife Manager, Bill Rudge, Natural Resources Supervisor, and Leslie Zucker, Hudson River Estuary Program, NYSDEC

May 17, 2004 Shawangunk Ridge Biodiversity Partnership

March 8, 2005 Congressman Scott Garrett and staff in Washington, D.C.
 Congresswoman Sue Kelly in Washington, D.C.

Release of Draft CCP

In March 2008 we completed and released the draft CCP/EA for a 66-day public review and comment. In addition, we held a public meeting/open house on the following dates at the following locations:

February 20, 2008

Number of non-FWS attendees: 68

Location: Augusta, NJ

February 21, 2008

Number of non-FWS attendees: 97

Location: Wantage, NJ

March 6, 2008

Number of non-FWS attendees: 78

Location: Warwick, NY

We analyzed all of the comments on the draft CCP/EA we received during its 66-day public review, and applied them when we revised it into our final CCP. Appendix J summarizes those public comments and our responses to them.

Each year, we will evaluate our accomplishments on the refuge in accordance with the preferred action selected in the final CCP. We may intensify refuge monitoring without additional NEPA compliance; however, any results of our future monitoring that predict a new, significant impact would require our analysis and public involvement in an additional environmental analysis.

Appendix J

USFWS



The Wallkill River flows north from New Jersey into New York.

Summary and Response to Public Comments

Introduction

We received 683 unique responses to our draft CCP/EA in oral comments at our public meetings, via e-mails, and written comments from a total of 2,781 respondents. The comment period lasted 66 days from February 4 to April 9, 2008.

We received 4 comments from state agencies:

- New York State Department of Environmental Conservation
- New Jersey Department of Environmental Conservation
- New Jersey Division of Fish and Wildlife
- High Point State Park, N.J.

We received 3 comments from Federal Congresspersons:

- Senator Frank Lautenberg (N.J.)
- Congressman Scott Garrett (N.J. 5)
- Congressman John Hall (N.Y. 19)

We received 7 comments from local (county, municipal, etc.) governments/officials:

- Evanford Township, N.J. Open Space Committee
- Frankford Township, N.J.
- Orange County, N.Y., Division of Planning
- Sussex County, N.J. Board of Chosen Freeholders (2)
- Wantage Township, N.J.
- Warwick Township, N.Y.

We received more than 50 comments from groups, associations, clubs, organizations, boards and other organized entities including:

- Appalachian Mountain Club (NY-NJ chapter)
- Committee to Abolish Sport Hunting
- Friends of the Wallkill River Refuge
- Hudson Valley AgriBusiness Development Corporation
- National Wild Turkey Federation (N.J. chapter)
- National Rifle Association
- New Jersey Animal Rights Alliance
- New Jersey Audubon Society (various local chapters)
- New Jersey Conservation Foundation
- New Jersey Federation of Sportsmen's Clubs
- New Jersey Highlands Coalition
- New York-New Jersey Trail Conference
- Orange County, N.Y. Agricultural and Farmland Protection Board
- Orange County, N.Y. Farm Bureau
- Orange County Land Trust
- Orange County, N.Y. Soil and Water Conservation District
- Outdoor Writers Association of America
- Ruffed Grouse Society (Skylands Chapter)
- Sierra Club (various local chapters)
- Sussex County Municipal Utilities Authority
- The Bear Education and Resource (BEAR) Group
- The Humane Society of the United States
- The Warwick Conservancy
- Vernon Civic Associations
- Wallkill River Watershed Management Group

We received 2,781 responses from individuals:

- 2,494 e-mails (2,285 form letters)
- 218 letters (54 form letters)
- 15 faxes
- 54 oral testimonies

During the comment period, 243 people attended our three public meetings on February 20, 2008, from 6:00 p.m. to 9:00 p.m., at the Trico Credit Union Community Room in Frankford, N.J.; February 21, 2008, from 6:00 p.m. to 9:00 p.m. at the Sussex-Wantage Public Library in Wantage, N.J.; and March 6, 2008, from 6:30 to 9:00 p.m., at the Warwick Township Town Hall, N.Y. Some participants presented their comments orally, some provided written comments and some people provided both. More comments arrived later via mail or e-mail.

The following discussion summarizes the substantive issues raised by the public's comments and our responses to them. Many of our responses refer to the full text of our draft CCP/EA. If you would like to view or download copies of the draft plan, it is available online at <http://www.fws.gov/northeast/northeast/planning/Wallkill%20River/ccphome.html>. You may also request them on CD-ROM by contacting the refuge headquarters at 973 702 7266 or wallkillriver@fws.gov, Wallkill River NWR, 1547 County Route 565, Sussex, NJ 07461.

1. Planning Process and Policy

Comment: Some reviewers requested that the Service increase the length of time available to comment on the Comprehensive Conservation Plan (CCP) and Land Protection Plan (LPP), and one asked the Service to add a public hearing meeting in New York State.

Response: As noted in the Appendix I, Consultation and Coordination with Others, in the final plan, the Service did decide to extend the comment period by 30 days. As a result, the public comment period was extended until April 9, 2008. In addition, the Service added a public comment meeting in New York State that was held on March 6 at the Warwick Town Hall.

Comment: Some reviewers commented about the CCP process and the role of the public in determining the final outcome.

Response: Most of the information relating to the CCP process is located in Chapter 2 of the final CCP. In summary, the Service must consider all substantive public comments. In consultation with staff and partners, we develop and approve a final CCP. All decisions are made using the best available science and management, which are then applied in the context of the laws and regulations that govern the Service. More information about this process may also be found online at www.fws.gov/refuges.

Comment: One reviewer stated they believed the Service did not adequately analyze the impacts of expanding hunting opportunities on the refuge.

Response: The Service worked closely with the state of New Jersey, collected and analyzed data about refuge lands, and worked within the legal and scientific framework established for opening a refuge to hunting. More information about hunting is located in the draft CCP/EA in Chapters 3 and 4 and in Appendix B. In those sections, we outline our data collection and analysis, which demonstrates population levels and impacts of expanded hunting programs.

Comment: One reviewer inquired about the Service's authority to expand the refuge.

Response: A refuge can be expanded by (a) law (b) an executive order or (c) administratively by the authorities in the Fish and Wildlife Act of 1956 and the Migratory Bird Conservation Act of 1929. The Land Protection Plan, as Appendix G to the final CCP, facilitates the process to expand the refuge.

Comment: Many reviewers appreciated the opportunity to comment on the draft CCP/EA and were supportive of the Wallkill River National Wildlife Refuge (NWR) and the National Wildlife Refuge System in general.

Response: The Service thanks these reviewers for their support.

Comment: A few reviewers noted minor editorial changes that the Service should make to improve the document's readability and clarity. One reviewer commented on the language used by the Service that, in their opinion, placed hunting in conflict with other public uses.

Response: The Service would like to clarify that, with the exception of ensuring visitor safety, hunting is not seen as being in conflict with any other form of wildlife dependent recreation. Where appropriate, we have made minor changes based on these comments. Thank you for your input.

2. Purpose and Need: No response necessary

3. Affected Environment and Environmental Consequences

Comment: We received a number of comments about water quality within the refuge and the Wallkill River watershed. Individual concerns ranged from contaminants from outside the refuge and their impact on refuge habitats, to chemicals used by the refuge in various aspects of refuge management. A few reviewers also discussed the refuge's role in relation to the quality and quantity of wetland habitats.

Response: With 9 miles of the Wallkill River running through lands currently managed by the refuge, water quality is a concern. One of the refuge's founding purposes is to improve water quality and aquatic habitats within the refuge, so it falls within the refuge's goals to monitor and improve quality. We address water quality in the draft CCP/EA in objective 2.2 for each of the alternatives in Chapter 3, and in Chapter 4 (pages 4-8 to 4-11). Where feasible and appropriate, the refuge will continue to restore wetland habitats on the lands that it manages. Wetland restoration and enhancement, as well as other land restoration activities that reduce erosion and impervious surfaces, will improve water quality and aquatic habitats. These actions are discussed in each of the alternatives as Objectives 1.3 and 2.1 of Chapter 3 in the draft CCP/EA. The refuge does occasionally use or authorize the use of chemical controls of nuisance wildlife/invasive species. These activities are discussed in the "Common to All" objectives section of Chapter 3 of the draft CCP/EA, and impacts from these activities are discussed in Chapter 4 (pages 4-8 to 4-11) in the draft CCP/EA.

4. Cultural and Historic Resources: No response necessary

5. Socioeconomic Setting

Comment: Several reviewers were concerned about the socio-economic impact of the refuge expanding into the Black Dirt region of Pine Island, N.Y. Specifically, they mentioned financial impacts, taking land out of farmland production, economy-of-scale impacts, their agricultural way of life, and the value of farming to the local economy.

Response: Based on individual conversations and oral and written comments, the scope of the expansion was generally misunderstood. The expansion in Warwick Township only includes land owned by two landowners. Even if all of the land within the Black Dirt region identified by the Service was purchased, it would total approximately 210 acres. This is about 1.4 percent of the 14,500 acres of farmland within the Black Dirt region. In addition, the Service has a policy of buying land from willing sellers only, and has no intention to alter the current state of the agricultural economy in the Black Dirt region. It is possible that with some purchase options, (e.g., easement, life use reservation) farming could continue on any land that would be added to the refuge. For more information about the expansion in Warwick Township, please refer to the Land Protection Plan which is located in Appendix G of the CCP.

Comment: Several people commented on the contribution of refuge-related activities such as hunting and wildlife observation to the local economy. One reviewer encouraged the refuge to increase wildlife-dependent recreational uses to enhance the local tourism industry.

Response: Chapters 3 and 4 of the CCP discuss refuge-related tourism. In Chapter 4, we discuss the additional opportunities for wildlife dependent recreation that will be available as a result of implementing the CCP. Further information on Service-related tourism is available in the Service's Banking on Nature Report, which is mentioned in Chapter 3 and is available online at www.fws.gov.

Comment: Some reviewers commented on the relationship of refuge lands to property taxes. They asked about Refuge Revenue Sharing Payments and their relation to local taxes. Some expressed concerns their private property rights would be affected by the refuge expansion plan.

Response: The Service cannot speculate on what might happen to land values based on hypothetical situations; however, we are able to report what funds we have provided to local governments via Refuge Revenue Sharing Act payments as shown in Chapter 2 (page 2-8) of the draft CCP/EA. In Chapter 2, we also indicate that land in refuge ownership requires little in municipal services compared to private lands. The Service has no authority to regulate lands it does not own, so the Land Protection Plan will not affect private property rights. More information about the LPP is available in Appendix G.

6. Refuge Administration

Comment: Many reviewers commented on the Land Protection Plan. Most were generally supportive of the full expansion. A few reviewers expressed a belief that a refuge expansion could reduce flooding events downstream along the Wallkill River, while others had questions about the logistics of the LPP.

Response: Criteria used in determining the refuge expansion and how the Service purchases land are located in the Land Protection Plan (Appendix G). Priorities for land acquisition are also discussed in the LPP. Wetlands are known to reduce the magnitude and duration of flooding events. The refuge's efforts to restore natural hydrological flows within previously ditched areas are discussed in Objectives 2.1 to 2.3 of Alternative B (Chapter 3) of the draft CCP/EA.

Comment: One reviewer expressed a preference that new refuge lands should be open for public access, while another mentioned they would prefer for refuge lands to be protected from the negative impacts of recreational activities. A few reviewers also noted that the LPP would protect wildlife and habitat and create an ecological connection between the Hudson Highlands and Ridge and Valley Province.

Response: The Service's mission and responsibilities include providing wildlife dependent recreational opportunities where compatible with the primary purposes of the refuge and the mission of the National Wildlife Refuge System. The objectives under Goal 3 in Chapter 3 (Objectives 3.1 to 3.5) and Appendix B (Appropriate Use and Compatibility Determinations) of the draft CCP/EA outline how refuge staff ensures that wildlife dependent recreation does not negatively impact wildlife and habitats.

Comment: A few reviewers asked how the Service defines the expansion area, with one reviewer specifically suggesting that the Service make upland acquisition a priority since wetlands already receive state protection. Several reviewers stressed the need for land acquisition to be voluntary (no use of eminent domain).

Response: It is the Service's policy only to buy land from willing sellers. The Service does not utilize eminent domain as a land acquisition tool, but like any government agency, the Service has eminent domain available to it. This policy is discussed in-depth in the LPP. Any landowners interested in learning more about how the Service purchases land may contact the refuge manager or the Region 5 realty office.

Comment: Some reviewers expressed concerns about land expansion, citing that the refuge already had more land than it could maintain, that enough wetlands were already preserved, or that they were against public ownership of land in general. One reviewer questioned how the Service will maintain additional lands in the expansion area when budget and staffing are currently being cut.

Response: The Service is confident that there is a need to continue to protect wildlife, wildlife habitats and wetlands along the Wallkill River and its tributaries. As the Service has a responsibility to carry out its mission, defined by the legislative and executive branches of the Federal government, we will continue to work with local communities and other partners to fulfill our mission. Also, land acquisition funds and refuge operations funds come from different funding sources.

Management of Service lands is dependent on a variety of factors, many of which the Service does not have direct control over. Mainly, the Service receives its annual budget from Congress, which in turn drives regional and station budgets. In addition, temporary staff, volunteers, friends groups and partners can all contribute to maintaining refuge resources. It is also important to note that the Wallkill River refuge is part of a complex with Great Swamp refuge, which has a full-time staff of 10 employees who also provide support for the refuge. Just as the LPP defines the Service's vision for an expanded refuge, Appendix F of the CCP defines the Service's vision for refuge staffing.

Comment: Some land owners in the Black Dirt region of New York expressed concern over the potential negative impacts of a refuge expansion on their farming operations.

Response: Much of the confusion regarding the concern over farming in the Black Dirt region came from a general misunderstanding of the scope of the LPP. Some reviewers thought that the expansion includes areas well outside the LPP area and this led to erroneous conclusions. The Service does not think that purchase of up to 1.4 percent of the Black Dirt area will negatively impact the overall farming community. The refuge is continuing to establish better communication with the farming community to better understand their concerns and find areas where we can work together. With a number of options available for addressing the concerns of local farmers and the recognition that we need to work together, the Service is confident that all reasonable concerns will be addressed.

Comment: A large number of people were supportive of the LPP, but their objections to a bear hunt caused them to speak against the land expansion proposed in Alternative B and instead support the expansion as proposed in Alternative C of the draft CCP/EA, which did not include the Beaver Run Focus Area and the Adjoining West Focus Area.

Response: The Service understands that the bear hunt is a controversial issue, especially in the State of New Jersey. In many cases, those who preferred Alternative C because they objected to the bear hunt preferred the land expansion in Alternative B. The Service would like to clarify that the selection of an expansion area and the decision to have a bear hunt are independent of one another. Further response to the bear hunt issue is made in the sections on hunting below.

Comment: Several reviewers commented that the agricultural community in the Black Dirt region of New York can manage the lands identified in the LPP consistent with refuge goals without refuge ownership.

Response: The Service respectfully disagrees that the agricultural community can manage lands consistent with the refuge mission and goals. While agriculture and refuge interests do have many areas of common interest (healthy ecosystems, clean water, predictable climate, etc.), land use by farmers and refuge managers is, and should be, different. The Service does not believe this difference in land management should create a barrier to good relations between the refuge and the agricultural community. The refuge is part of a national system of lands set aside for wildlife and wildlife-dependent recreation and is managed by a staff of biological and other professionals. The CCP is a document that represents the vision for this refuge for the next 15 years, but many other plans are incorporated into the operation of refuge lands, as discussed in Chapter 1 (page 1-15) of the draft CCP/EA.

Comment: Some reviewers expressed concern that the Service mismanages its lands and this causes flooding on adjacent private lands and facilitates the spread of invasive plant and animal species. The Orange County Agricultural and Farming Protection Board (AFPB) requested that the Service create a policy to address local farming and drainage in areas where agricultural and refuge interests interact.

Response: In the past year, the Service has worked with the local farming community and township to improve drainage. The Service has also made an effort to listen to farmer concerns, look for grant opportunities, get involved in community/county planning efforts, discuss nuisance plant and species problems, and improve overall relations with the Black Dirt community.

The Service, like every other landowner in the Wallkill River Valley, is concerned about flooding. The increase in impervious surfaces and erosion in upstream areas have increased flooding episodes within the Wallkill drainage. Large storms and flooding events are documented throughout the Wallkill drainage area. Wetland and adjoining upland restoration and improvement will help reduce the magnitude and duration of flooding events. When refuge lands flood, it is part of the natural cycle and prevents harm from reaching human developments and agricultural properties downstream.

Service lands and our moist soil management units (impoundments) are carefully managed to hold water for migratory waterfowl during spring and fall migrations, but at an average depth of 18 inches they are simply not large enough to play a significant role in flooding, even at a local scale. More information about how we manage our moist soil units is available in Chapter 3, especially in Objective 1.2 of Alternatives A and B.

Comment: A few reviewers were concerned about the facilities and maintenance situation on the refuge. One cited the deteriorated condition of some properties and another asked for more infrastructure for wildlife-dependent recreation such as trails and observation blinds. A few reviewers commented on the overall maintenance situation on the refuge and the ability of the refuge to maintain its infrastructure.

Response: In fiscal year 2007, the refuge demolished 26 structures and is in the process of restoring these sites as wildlife habitat. Most of the remaining deteriorating structures that are on land managed by the refuge remain the property of the State of New Jersey. The refuge is working with the state to see what can be done about removing these structures.

New infrastructure for wildlife dependent recreation on the refuge is discussed in Chapter 3 of the draft CCP/EA in Objectives 3.2 to 3.5, particularly in Alternative B.

Appendix F of the draft CCP/EA defines the Service's vision for refuge staffing, which includes an additional 5 full time positions in Alternatives B and C. It is also important to note that Wallkill River refuge is part of a complex with Great Swamp refuge, which has a full-time staff of 10 that provides support for Wallkill. With limited refuge resources, Friends and partners can, and do, contribute to maintaining the refuge.

Comment: Many reviewers wrote in favor of the staffing levels identified in Alternative B of the draft CCP/EA. Some stressed the importance of increased staffing with the proposed expansion and cited the need for on-site staff and management to maintain effective local communication and partnerships. Many complimented the current refuge manager and staff's ability to deal with the issues that occur on the refuge. These reviewers feel that the refuge cannot be adequately managed without an on-site manager and staff. A few reviewers expressed their dismay at how complexing the refuge with Great Swamp refuge has resulted in the refuge having many of its staff resources, and in the near future its management, 60 miles away.

Response: The Service thanks all those who have written in support of the current management staff located at the Wallkill River refuge. We appreciate the support during this period of adjustment for the refuge and the complex.

This CCP proposes a larger staff for Wallkill River refuge, as stated in Appendix F, although the Service recognizes that putting such staff in place requires adequate funding.

Management of Service lands is dependent on a variety of factors, many of which the Service does not have direct control over. Mainly, the Service receives its annual budget from Congress, which in turn drives regional and station budgets. Temporary staff, volunteers, Friends Groups and partners all contribute to maintaining refuge resources. While complexing does pose certain challenges for refuge managers, we believe this is the most effective method for managing the complex at this time.

Comment: Some reviewers complimented the Service's partnerships with individuals and organizations within the community. A couple of reviewers who object to consumptive uses on refuges were against our entering into partnerships with organizations that promote such uses.

Response: The Service is pleased to be recognized for its hard work and dedication to the community with respect to partnerships.

The Service's mission and heritage clearly defines six priority public uses: hunting, fishing, interpretation, environmental education, wildlife observation and wildlife photography. While some individuals and organizations may object to these uses, our responsibilities in these areas are clear, and we are proud of our association with the groups and people who work hard to support the Service's mission and goals. For more information on partnerships, see Chapter 3 (Objectives 2.2, 2.3, and 3.1 to 4.3, particularly in Alternative B).

7. Biological Resources

Comment: One reviewer opposed the use of grazing as a management tool because livestock can bring disease to wildlife.

Response: Using cattle to improve bog turtle habitat is an accepted and effective method for creating a microtopography beneficial for bog turtles. In Chapter 3 of the draft CCP/EA we discuss this in detail in the "Common to All Alternatives" and in Objective 1.5 sections. We further discuss this activity in the Appendix B (Grazing) and in Chapter 4 (page 4-22 among others).

8. Habitat Management

Comment: Several reviewers commented about mosquito populations in and around the refuge. One felt that it is a refuge responsibility to control mosquito populations, and asked the refuge to do more to control mosquito populations.

Response: On October 15, 2007, the Service published in the Federal Register its "Draft Mosquito and Mosquito-Borne Disease Management Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997." Until the draft policy is finalized, we will follow the "Interim Guidance for Mosquito Management on National Wildlife Refuges," prepared in spring 2005. This document provides refuges with interim guidance on addressing mosquito-associated health threats in a consistent manner. Like the draft policy, the guidance states that refuges will not conduct mosquito monitoring or control unless it is necessary and compatible to protect the health of a human, wildlife, or domestic animal population. If there is a declared health emergency, the Service will work with local and state mosquito managers to minimize any risks to human health.

The Sussex County Health Department has determined that there are endemic mosquito-borne diseases in the vicinity of the Refuge. The major mosquito-borne disease of concern at Wallkill River refuge is West Nile Virus. Identification of WNV infected mosquitoes in Sussex County nearly every year since 2000 indicates that the virus is locally maintained within the wildlife cycle. Therefore, monitoring and control measures are warranted.

The Sussex County Office of Mosquito Control (Division) is responsible for monitoring larval and adult mosquitoes on the refuge. The purpose of monitoring is to detect changes in mosquito populations that indicate an increased risk to human or wildlife health. In addition, adult mosquitoes collected from the refuge

can be tested for the presence of pathogens. The Division will monitor mosquito populations from April through October and, when necessary, will conduct mosquito control measures according to predetermined thresholds in a mosquito management plan and a special use permit.

Comment: Many reviewers wrote in favor of our current and proposed management strategies for refuge habitats and our proposal to reforest lands along the river corridor. A few reviewers expressed concerns about how this management, in particular emergent and non-forested wetlands, would relate to potential flooding, especially in the Liberty Marsh area. A couple of reviewers had specific comments relating to favoring a single habitat type or species (e.g. favoring grasslands over scrub-shrub habitat).

Response: Service lands that are managed as moist soil management units are carefully managed to hold water for migratory waterfowl during spring and fall migrations, but at an average depth of 18 inches they are simply not large enough to play a significant role in flooding, even at a local scale. More information about how we manage our moist soil units is available in Chapter 3 of the draft CCP/EA, particularly in Objective 1.2.

The Service, like every other landowner in the Wallkill Valley, is concerned about flooding. The increase in impervious surfaces and erosion in upstream areas have increased flooding episodes within the Wallkill drainage. Large storms and flooding events are documented throughout the Wallkill drainage area. As mentioned above, wetland restoration and other land preservation efforts can help reduce flooding events.

The Service's decisions to manage for habitat types or a particular species are located in Chapter 3 of the draft CCP/EA, specifically under Goal 1 and its related Objectives (1.1 to 1.6 in particular).

Comment: Several reviewers commented about the refuge's ability to control invasive species. Some are concerned about Canada thistle and multiflora rose on the refuge and its potential to spread to neighboring lands. They want to know how the refuge plans to control these species. Other reviewers are concerned about the refuge's use of herbicides to control invasive species.

Response: The Service is committed to controlling invasive species on its lands and is an active partner in working to reduce the spread of invasive species to neighboring lands as well. Through grants and partnerships, Wallkill River refuge has a track record of working with neighbors and local communities to work on controlling invasive species.

All of our activities relating to invasive species (plant and animal) are discussed in Chapter 3 (page 3-3) of the draft CCP/EA. The refuge uses a combination of mechanical control, chemical applications and fire to control invasive species. For invasive plants this typically involves the application of Rodeo or Roundup. Impacts from these activities are discussed in Chapter 4 (pages 4-23 and 4-26 among others) of the draft CCP/EA.

9. Threatened and Endangered Species: No response necessary

10. Wildlife

Comment: A number of reviewers provided comments about wildlife on the refuge, ranging from personal observations and preferences for particular species to sharing their own observations about species use. A few reviewers shared their views on managing nuisance wildlife. One was concerned about mercury levels in fish.

Response : The Service welcomes additional opportunities to gather data and examine strategies for managing wildlife; however, like all Service programs, such data must be based in sound science and management. Through partnerships and volunteer programs, many of these types of observations can become part of the data used by the refuge to improve our inventory and monitoring efforts, and to involve interested parties in a constructive and meaningful way in refuge activities. More about the refuge partnership and volunteer programs can be found in the draft CCP/EA, Chapter 3, Objective 4.3 or by contacting the refuge directly.

Overabundant and nuisance wildlife is addressed in the Common to All Alternatives section of Chapter 3 (page 3-4) and in Appendix B (Compatibility Determination for Trapping) in the draft CCP/EA.

Mercury levels in fish in the Wallkill River would be tracked by the states of New York and New Jersey, but the Service would work closely with the states to inform the public of any levels of contaminants in fish that would require the public to be informed.

11. Priority Public Uses

Comment: A large volume of reviewers commented on hunting on the refuge, with the great majority of them focused on bear hunting.

Many of these reviewers opposed hunting on the refuge. They noted that there are non-lethal methods available for controlling populations, that hunting can increase wildlife populations due to reproductive rebound, that a great majority of New Jersey's residents are non-hunters, that hunting is in decline, that hunting glorifies violence, and that it is merely thrill seeking. Some other concerns we received were that hunting impacts habitats, that it interferes with other refuge uses, that there is the possibility of harm from irresponsible/accidental use of firearms, and that nature should be able to take care of itself. Many reviewers commented that the idea of a "refuge" should not include hunting. Several expressed a dislike for baiting animals or manipulating habitats to benefit game species.

A few reviewers suggested the Service present an alternative with no hunting, stating they felt the hunt was not supported by the evidence or Service/Federal regulations.

A large volume of reviewers (but not as large as the anti-hunting reviewers) wrote in with comments in favor of hunting. These reviewers supported hunting because it helps to maintain healthy wildlife populations and ecosystems; it is the most effective way to control wildlife populations; it maintains a traditional use; it strengthens family bonds; it supports Executive order 13443, "Facilitation of Hunting Heritage and Wildlife Conservation;" it provides economic benefits to the local community; and because the refuge can offer a high quality hunting experience.

Response: The Service recognizes the controversial and, to many people, emotional nature of hunting (bear hunting in particular). The Service, however, must manage its lands under the Federal laws and regulations that guide the agency, which include the Refuge Improvement Act of 1997 and its formal recognition of hunting as a priority public use of the refuge system and Executive Order 13443, which requires the Service to facilitate hunting opportunities, where feasible and appropriate, on refuge lands.

Comment: Some reviewers stressed the need to use sound science and good management in determining hunting policy and warned against being influenced by emotional pleas from non-hunters and asking for non-expert opinions in areas that required professional analysis.

With regard to a bear hunt, some reviewers wrote to us citing the need for a hunt based on high local populations, threats to human safety from aggressive bears, the link between bear populations in New Jersey and neighboring states, the need to manage the bear population, the likelihood of disease and aggression among bears if the population is not controlled, the need to create a fear of humans among New Jersey's bear population, the need to coordinate a bear hunt with the State of New Jersey's management of bears, and the use of bear for food. A few reviewers were concerned that discussing the bear hunt separately made it too much of a high-profile issue.

Response: Using the best science and management available and the expertise of managers and biologists, the Service analyzes the available information to create and implement a hunting program. Appendix B includes the Appropriate Use and Compatibility Determination for hunting and for bear hunting. Impacts from hunting are included in Chapter 4 of the draft CCP/EA (see pages 4-54 to 4-57).

Comment: Some reviewers stated that hunting does not solve the problem of nuisance animals, particularly

bears, and that the data available was not credible, and thus could not be used to support a hunt. They cited anecdotal evidence that there were not that many bears in the proximity of the refuge, and stated that bears are not a threat to people, hunting does not reduce problem bears, wounded bears are a bigger danger, and it is a trophy hunt. Several reviewers stated they felt the Service was undermining the state's decision not to have a bear hunt, and some felt that having a bear hunt would lead to the elimination of bears from New Jersey. Some reviewers thought increased education measures would create appreciation for bears and the use of bear-proof garbage cans and other techniques to reduce negative bear-human interactions.

Some reviewers specifically stated that they were against youth hunting citing that it contributes to youth violence, while a few reviewers favored a youth hunt, stating that it helped to pass on a traditional use to a new generation.

One reviewer was concerned that the refuge manager might have the ability to override Service regulations and cancel hunts. A few reviewers wanted extended seasons or additional seasons including grouse, pheasant and small game. One reviewer wanted to ensure that newly acquired lands in New York would be open to hunting.

Response: We would like to stress that the Service will only hold a bear hunt on the refuge in a particular year, if and only if, the state of New Jersey is conducting a bear hunt as well. Only by integrating the refuge's bear management into that of the state's will any type of population control program be successful. Also, the refuge's youth hunt is not a separate youth hunt conducted by the refuge, but is the state of New Jersey's youth hunt, which is taking place on the refuge as we work to integrate with state seasons (see Chapter 4, Objective 3.1 for more information).

Comment: Many reviewers commented on other public uses on the refuge. A few reviewers commented on fishing, mainly in the context of not stocking the river or objecting to fishing as inhumane. A few other reviewers commented on expanding wildlife-dependent recreational opportunities on the current refuge and on the proposed expansion lands. Specifically, reviewers wanted to have more interpretation; environmental education; access for hunting; access to the river; and access to refuge lands via trails for wildlife observation, photography and recreation.

Response: In general the Service does not stock fish on National Wildlife Refuge lands except for special events. Stocking fish, however, can help restore native populations in areas where populations are low. This is not done with consideration to fishing, but to aquatic ecosystem integrity. For more information on the refuge's fishing program, see Objective 3.2 in Chapter 3 of the draft CCP/EA. The Service, especially through its partnerships with groups such as the Friends of the Wallkill River Refuges and New Jersey Audubon Society, already provides some interpretation and environmental education, and the refuge plans on increasing these offerings, as outlined in Chapter 3 (Objectives 3.4 and 3.5). Increased access to refuge lands is discussed in Objective 3.3.

12. Non-Priority Public Uses

Comment: Some reviewers did not agree with our proposal to open up the remainder of the Liberty Loop Nature Trail to dog walking. A couple of reviewers wanted the refuge to be open for horseback riding.

Response:. Although we have not done an official Appropriateness Finding for horseback riding, our experience is that horseback riding can cause significant damage to refuge resources. Therefore it is not currently permitted on the refuge. Through the CCP process we completed an Appropriate Use Finding and a Compatibility Determination for dog walking on the Liberty Loop Nature Trail and found that use both appropriate and compatible. The Appalachian Trail (AT) runs concurrent with a portion of the Liberty Loop Nature Trail. Permitting dog walking on the AT portion of the Liberty Loop Nature Trail would allow through-hikers with dogs to continue on the AT rather than forcing them to walk on public roads with limited shoulder space. More importantly, because dogs are leashed and because the trail follows a dike system that

isolates the activity from the surrounding wildlife habitats, the potential impacts are minimal. We will also allow dog walking on the portion of the Liberty Loop Nature Trail that does not run concurrent with the AT because we feel this will not result in any additional impacts beyond those of allowing it only on the AT portion of the trail, and because it will allow refuge visitors to complete the loop trail. We discuss dog walking further in Chapter 4. The Appropriate Use Finding and Compatibility Determination for dog walking can be found in Appendix B.

13. Alternatives

Comment: Several reviewers favored Alternative A from the draft CCP/EA. A few opposed Alternative A, citing a lack of land expansion and no policy regarding bear management.

Comment: Many reviewers favored Alternative B, citing the proposed land expansion, improved species and habitat management, and expanding wildlife dependent recreation opportunities including increased hunting, fishing and wildlife observation opportunities. A number of reviewers supported Alternative B with the exception of the bear hunt.

Comment: Many reviewers favored Alternative C, with most of them citing the lack of a bear hunt proposal as the reason for their support. Some reviewers cited the alternative's reduced level of habitat manipulation and the focus on restoring a more natural hydrology to the Wallkill River and its floodplain.

Response: The Service thanks all the people and organizations that have taken the time to review and respond to the draft CCP/EA and LPP. The Service worked hard, both internally and with its partners and the public, to create the three alternatives and the many parts of the plan that compose the alternatives. We feel Alternative B best meets the purposes of the refuge and the mission of the National Wildlife Refuge System. Through our public meetings, comments and input, we have used the best available science and management to produce the final CPP.

Comment: Several reviewers requested an additional alternative that would completely eliminate consumptive uses on the refuge.

Response: The Service's mission and legal responsibilities require it to facilitate a number of wildlife-dependent recreational opportunities. Alternatives considering such approaches as mentioned in this comment would require legal changes at higher levels of government.

Appendix K

USFWS



The Wood Duck Nature Trail is a recycled railroad bed.

Finding of No Significant Impact

Finding of No Significant Impact

Wallkill River National Wildlife Refuge

Comprehensive Conservation Plan

In February 2008, the U.S. Fish and Wildlife Service (Service) published the draft Comprehensive Conservation Plan and Environmental Assessment (CCP/EA) for Wallkill River National Wildlife Refuge (NWR; refuge), which lies in Sussex County, New Jersey and Orange County, New York. That draft evaluates three alternatives for managing the refuge over the next 15 years, and carefully considers their impacts on the environment and their potential contribution to the mission of the National Wildlife Refuge System (NWRS) and the refuge's purposes, vision, and goals. Alternative B is identified as the Service-preferred alternative. The plan's appendixes provide additional information supporting the assessment and specific proposals in alternative B, including Appendix G, the Land Protection Plan, which identifies a 9,550-acre expansion proposal. A brief overview of each alternative follows.

Alternative A (Current Management): The Council of Environmental Quality regulations on implementing the National Environmental Policy Act (NEPA) require this "No Action" alternative, which we represent as current management. Alternative A includes our current programs and activities and serves as the baseline against which to compare the other alternatives. Under alternative A, we would continue to use a variety of habitat management tools to maintain the refuge's early successional habitats, non-forested wetlands, grasslands and forested communities. We would continue efforts to protect the Federal listed, threatened bog turtle by managing occupied sites on refuge-owned lands and attempting to acquire occupied sites within the current acquisition boundary. We would continue to offer hunt programs for deer, spring and fall turkey, migratory birds, woodcock and resident Canada geese on our lands in New Jersey according to that State's seasons. We would maintain current access sites for fishing and boating, and current trails for wildlife observation and photography. We would continue to offer limited environmental education and interpretation programs, as staffing and funding allows. Finally, we would continue to pursue acquisition from willing sellers of the 2,021 non-Federal acres of important wildlife habitat that lies within our currently approved acquisition boundary.

Alternative B (the Service-preferred alternative): This alternative includes an array of management actions that, in our professional judgment, work best toward achieving the purposes of the refuge, our vision and goals for those lands, and the goals in State and regional conservation plans. Alternative B would expand the current refuge boundary by 9,550 acres through a combination of fee-simple and easement acquisition from willing sellers. The proposed expansion boundary encompasses a 15-mile tributary of the Wallkill River; includes tremendous wetland resource values and forms a key corridor connection between preserved habitats on the Kittatinny Ridge to the west and the Hudson Highlands to the east. Habitat types in the expansion area are similar in nature to the habitat types in the original acquisition boundary. Also under alternative B, we would take a more proactive approach to restoring wetlands and a 100-meter riparian corridor along either side of the Wallkill River. We would establish three grassland focus areas on the refuge and let other small fields revert to early successional habitats to benefit migratory birds. We would continue our current hunting programs on Service lands owned in New Jersey and add bear hunting according to that State's season. Other opportunities for wildlife-dependent recreation would increase on the current refuge and would be added in the expansion area. Funding and staffing would increase to adequately support program expansions.

Alternative C: Alternative C would establish and maintain the ecological integrity of natural communities on the refuge and surrounding landscape without specific emphasis or concern for any particular species or species groups. Under alternative C, we would expand the refuge's current acquisition boundary by 7,609 acres to help restore the natural hydrologic regimen of the Wallkill River system. A bottomland hardwood forest component would be established on more than 70 percent of the current refuge. Sites prone to continuous flooding would likely be sustained as emergent marsh and shrublands. Upland sites would likely revert to a mixed mid-Atlantic hardwood forest association. We would attempt to restore the natural hydrologic regimen of the Wallkill River and its tributaries by removing man-made impediments to water flow. We would allow hunting for deer and resident Canada geese only. Other public uses within the current refuge boundary would remain the same as alternative A and additional opportunities would be offered in the proposed expansion boundary.

Finding of No Significant Impact (FONSI)

We distributed the draft CCP/EA for a 66-day period of public review and comment from February 4 to April 9, 2008. We received 683 unique responses from 2,781 individuals/groups. Appendix J 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, I have determined that the analysis in the EA is sufficient to support my findings. I am selecting alternative B, as presented in the draft CCP/EA, to implement as the final CCP. Alternative B helps fulfill the mission of the NWRS; best achieves the refuge's purposes, vision, and goals; maintains and, where appropriate, restores the refuge's ecological integrity; addresses the major issues identified during the planning process; and is consistent with the principles of sound fish and wildlife management.

I find that implementing alternative B adheres to all legal mandates and Service policies, and will not have a significant impact on the quality of the human environment, in accordance with Section 102(2)(c) of NEPA. Therefore, I have concluded that an Environmental Impact Statement is not required, and this Finding of No Significant Impact is appropriate and warranted.



ACTING

Marvin E. Moriarty
Regional Director
U.S. Fish and Wildlife Service
Hadley, Massachusetts

1/29/09
Date

Acronyms and Abbreviations

ACRONYM	FULL NAME
ACJV	Atlantic Coast Joint Venture
ARPA	Archaeological Resource Protection Act
AT	Appalachian Trail
ATV	All-terrain Vehicle
BCC	Birds of Conservation Concern
BCR	Bird Conservation Region
BMP	Best Management Practice
CAP	Contaminants Assessment Protocol
CCP	Comprehensive Conservation Plan
CD	Compatibility Determination
CFR	Code of Federal Regulations
CWCS	Comprehensive Wildlife Conservation Strategy
DEP	Department of Environmental Protection
DFW	New Jersey Division of Fish and Wildlife
EAcv	Environmental Assessment
EIS	Environmental Impact Statement
ENSP	Endangered and Nongame Species Program
EPA	Environmental Protection Agency
FONSI	Finding of No Significant Impact
FTE	Full-time Employee
FY	Fiscal Year
GIS	Geographic Information System
Highlands Act	Highlands Water Protection and Planning Act
HMP	Habitat Management Plan
HSIMP	Habitat and Species Inventory and Monitoring Plan
IAFWA	International Association of Fish and Wildlife Agencies
IDT	Interdisciplinary Study Team
LAPS	Land Acquisition Priority System
LPP	Land Protection Plan
LWCF	Land and Water Conservation Fund
MBCF	Migratory Bird Conservation Fund
NABA	North American Butterfly Association
NABCI	North American Bird Conservation Initiative
NAWCA	North American Wetlands Conservation Act

ACRONYM	FULL NAME
NEPA	National Environmental Policy Act
NGO	Non-governmental Organization
NHPA	National Historic Preservation Act
NJAS	New Jersey Audubon Society
NJDEP	New Jersey Department of Environmental Protection
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRI	Nationwide Rivers Inventory
NWPS	National Wilderness Preservation System
NWR	National Wildlife Refuge
NWRS	National Wildlife Refuge System
NWSRS	National Wild and Scenic River System
NYSDEC	New York State Department of Environmental Conservation
ORV	Outstanding Remarkable Value
OSHA	Occupational Safety and Health Administration
PAS	Population Analysis Site
PIF	Partners in Flight
Refuge Improvement Act	National Wildlife Refuge System Improvement Act of 1997
Refuge System	National Wildlife Refuge System
RONS	Refuge Operating Needs System
SAMMS	Service Asset Maintenance Management System
SUNY	State University of New York
SUP	Special Use Permit
TPL	Trust for Public Land
USFWS	United States Fish and Wildlife Service
USGS	U.S. Geological Survey
VS	Visitor Services
WAP	Wildlife Action Plan
WCU	Wildlife Control unit
WIA	Wilderness Inventory Area
WNV	West Nile Virus
WSA	Wilderness Study Area

Wallkill River National Wildlife Refuge
1547 County Route 565
Sussex, NJ 07461-4013
973/702 7266
wallkillriver@fws.gov

<http://www.fws.gov/northeast/wallkillriver>

Federal Relay Service
for the deaf or hard-of-hearing
1 800/877 8339

U.S. Fish & Wildlife Service
<http://www.fws.gov>

For Refuge Information
1 800/344 WILD

February 2009



*View of the refuge from Lake
Wallkill Road (background photo)*
Edward Henry/USFWS

Bog Turtle, Wallkill River
USFWS

*Downy Woodpecker, Black-throated
Green Warbler, Harrier pair*
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