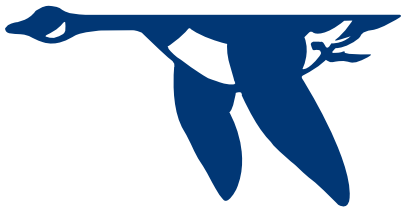
U.S. Fish & Wildlife Service

Cherry Valley National Wildlife Refuge

Final Environmental Assessment

December 2008



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

The U.S. Fish & Wildlife Service is the principal federal agency responsible for conserving, protecting, and enhancing fish and wildlife 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 restore wildlife habitat such as wetlands, administers the Endangered Species Act, and helps foreign governments with their conservation efforts. It also oversees the Federal Aid Program which distributes hundred of millions of dollars in excise taxes on fishing and hunting equipment to state wildlife agencies.

Finding of No Significant Impact
Cherry Valley National Wildlife Refuge Feasibility Study and Environmental Assessment
Monroe County, Pennsylvania

The U.S. Fish and Wildlife Service (Service) has proposed to establish the 20,466-acre Cherry Valley National Wildlife Refuge (NWR) in Monroe County, Pennsylvania to protect ecologically unique habitats. The valley currently supports, or has supported in the past, several nationally-rare ecosystems, five federally-listed threatened or endangered species, many migratory birds, and over 30 plant and animal species listed as threatened or endangered by the Commonwealth of Pennsylvania. It is recognized as one of the most unique and important areas for the federally-listed bog turtle (threatened), migrating raptors, and inter-montane wetlands. This final Environmental Assessment (EA) has been prepared to describe and evaluate the biological, environmental and socioeconomic effects of the proposed refuge.

Three alternatives, including a "No Action" alternative were developed and evaluated in this EA.

In Alternative A, there would be no new refuge and no designated acquisition boundary. Habitat protection and management would continue to be done by existing organizations and government programs. There would be no new opportunities for refuge-based wildlife-dependent public uses. This alternative would potentially subject the wildlife habitats of Cherry Valley to further development and could very well result in the loss of these Federal trust resources.

The Service's preferred action is Alternative B. When fully implemented, it will provide long-term protection to the 20,466 acres of the Cherry Creek and its riparian habitat, mature forest and forested ridges, forested wetland, emergent and scrub-shrub wetlands, and agricultural land consisting primarily of old fields, hay meadows, pasturelands, and croplands. The diverse habitats within the proposed refuge support numerous wildlife species, including neotropical migrant landbirds, waterfowl, fish, amphibians, mammals, and threatened or endangered animal and plant species. The refuge will also provide extensive opportunities for wildlife-dependent recreation, new and dynamic partnerships, and scientific research.

Alternative C would provide important protections and management opportunities for wildlife and habitats in the valley, especially for wetlands and ridge forests. However, compared to Alternative B, benefits for riparian and stream species (e.g. brook trout) and species associated with forested wetland ecosystems would be considerably less. Unlike Alternative A, it would offer substantial opportunities for compatible public uses, along with new refuge-based partnerships and scientific research; however, these opportunities would be substantially less than with the preferred action (Alternative B).

Based on a review and evaluation of the information contained in the supporting documents, including the final EA, Land Protection Plan, Realty Feasibility Study, and Conceptual Management Plan, I have determined that the preferred action, Alternative B, is not a major Federal action which would significantly affect the quality of the human environment within the meaning of Section 102 (2) (c) of the National Environmental Policy Act of 1969. The proposal

is part of a cooperative effort to preserve important natural resources and uses. The overall positive benefits to be derived from the protection of these lands will enhance the quality of the environment for local residents and the general public alike.

Based on the following summary of effects (as discussed in detail in the EA), I have determined that Alternative B, which I have selected, will not have a significant impact on the human environment. For this reason, I have determined that no environmental impact statement needs to be prepared.

1. The preferred action will not adversely impact the area's environmental quality, air quality, and water quality and supply. The proposed refuge is likely to improve these factors.

2. The preferred action will provide positive effects compared to Alternative A since creation of a Cherry Valley NWR would reduce the potential for large-scale development and related human disturbance on these lands and reduce the long-term potential for the resulting soil impacts.

3. The preferred action will enable the protection of over 1,400 wetland acres, 12,900 upland forest acres, and 3,400 acres of agricultural land and grasslands. This will have a major positive effect on habitats and ecosystems.

4. Protection of these lands and habitats for migratory birds will have direct, immediate, and long-term positive effects on resident, breeding, migratory, and wintering species of migratory birds and game birds.

5. Protection of these lands and habitats for threatened and endangered species, as with migratory birds, will have direct, immediate, and long-term positive effects on the bog turtle, and will offer immediate opportunities to assist in the recovery of the Indiana bat, and the dwarf wedgemussel.

6. The preferred action will have essential, positive effects on interjurisdictional fish and aquatic organisms because it will provide additional and necessary protection measures for valuable stream and riparian habitats.

7. The preferred action will have positive, long-lasting effects on other wildlife, and it will provide additional protection measures for all of the diverse habitats needed by these species.

8. The preferred alternative will have positive long-lasting effects on native and rare plants in the valley, and will provide protection measures for all of the diverse habitats needed by these plant species.

9. Economic impacts are difficult to determine. The fiscal impact to Monroe County and its townships would depend on both the quantity of land acquired and the rate of acquisition.

Economic gains from wildlife-oriented recreation may be expected by local merchants in the valley.

10. The preferred alternative will benefit cultural resources by ensuring that none of the substantial impacts related to development for residential or commercial uses will affect known or undiscovered cultural and historic resources on those lands.

11. Acquisition of lands, either in fee title or conservation easements, will be on a willing seller basis. Willing sellers will be compensated for their lands based on the appraised fair market value. Landowners choosing not to sell will retain all the rights, privileges, and obligations of land ownership.

12. County or tax revenues lost due to a change from private ownership to public will be somewhat offset by annual payments paid to the county/town through the Refuge Revenue Sharing Act.

13. This proposal does not represent any change in Service policy nor does it establish any precedent-setting actions that may have significant adverse environmental impacts of long-term implication.

Implementation of this decision can occur with the Director's approval of the Land Protection Plan, as soon as the public is notified.

Marvin E. Moriarty
Regional Director DEC 16 2008

United States Department of the Interior

FISH AND WILDLIFE SERVICE
300 Westgate Center Drive
Hadley, MA 01035-9589

In Reply Refer To:
FWS/R5/NWRS/039418

DEC 1 1 2008

Memorandum

To: Director

From: Regional Director, Region 5

Subject: Proposed Cherry Valley National Wildlife Refuge Package
Request for Directorial Action

We request your review and approval of our Environmental Assessment, Preliminary Project Proposal, and supporting documentation for the proposed Cherry Valley National Wildlife Refuge, Monroe County, Pennsylvania. The preferred alternative is to establish a 20,466-acre refuge, in which land would be protected through 50 percent fee title acquisition and 50 percent easement development.

As outlined in the attached documents, this area contains a nationally-significant habitat that supports several nationally-rare ecosystems, five federally-listed, threatened or endangered species, many migratory birds, and over 30 plant and animal species listed as threatened or endangered by the Commonwealth of Pennsylvania. It is recognized as one of the most unique and important areas for the federally-listed, threatened bog turtle, migrating raptors, and inter-montane wetlands. Approval of this project, with the resulting land acquisition and management effort, will support our efforts to help recover the bog turtle.

In developing this project, we worked closely with The Nature Conservancy, Pennsylvania Game Commission, Pennsylvania Fish and Boat Commission, and local governments and individuals, among others. In addition, Congressmen Paul Kanjorski and Charles Dent, Senators Arlen Spector and Robert Casey, State Senator Lisa Boscola, State Representative John Siptroth, and Governor Edward Rendell are very supportive of the project. The project will become part of a large, protective effort in the Ridge and Valley region that involves multiple partners across at least three states, and will address protection needs on a broad ecoregional scale.

The enclosed package includes a briefing statement; the Final Feasibility Study and Environmental Assessment and associated Finding of No Significant Impact (FONSI); the Preliminary Project Proposal and LAPS analysis; and the Core Principles table. If you agree and approve by signing below, we intend to finalize the documents and establish the refuge boundary

through approval of the FONSI by the Regional Director. We expect that no further Washington Office approvals will be required, and that land acquisition can begin in accordance with Service policies and procedures.

If you would like more information, please contact me directly.

Attachments

APPROVE N Dale Hall DISAPPROVE _____

Date 12/16/08 Date _____

Final Cherry Valley National Wildlife Refuge Feasibility Study and Environmental Assessment

Type of Statement:	Final Environmental Assessment (EA)
Lead Agency:	U.S. Department of the Interior U.S. Fish and Wildlife Service (Service)
Responsible Official:	Marvin Moriarty, Regional Director, Region 5
For Further Information:	Carl Melberg Refuge Planning U. S. Fish and Wildlife Service Northeastern Regional Office 300 Westgate Center Drive Hadley, MA 01035 (413) 253-8636 email: northeastplanning@fws.gov

Abstract: In accordance with the National Environmental Policy Act (NEPA), as amended, the Service has developed a Final EA in response to the Cherry Valley National Wildlife Refuge Study Act of 2006 (Study Act). This document offers proposed refuge purposes, vision, and goals. It also presents a detailed description of the physical, biological, and socioeconomic environment within which the study takes place, thus defining the area that may be affected by a refuge. Most important, the Final EA recommends Alternative B as the preferred action for establishing a refuge in Cherry Valley. The Service believes Alternative B is the best alternative for fulfilling the intent of the Study Act, and the proposed refuge purposes, vision, and goals. In addition to the preferred action, two other reasonable alternatives are presented for comparison purposes. The three alternatives are summarized briefly below:

- Alternative A: No Refuge -- This is the "No Action" alternative. It serves as a baseline to which the other alternatives are compared. In this alternative, there would be no new refuge and no designated acquisition boundary. Habitat protection and management would continue to be done by existing organizations and government programs.
- Alternative B: Cherry Valley Diverse Habitat Complex -- This is the preferred action. It proposes protection of up to 20,466 acres for a national wildlife refuge. Protection of lands would be done through fee title (about 50 percent of the acres) and conservation easements (about 50 percent of the acres). This alternative would provide protection for more extensive habitat areas, compared to Alternatives A and C, that potentially would better enable the Service to meet the needs of both rare and more common species of wildlife.
- Alternative C: Cherry Valley Wetlands and Ridge Forests Complex -- This alternative proposes protection of up to 14,124 acres for a potential refuge. Protection of lands would be done through fee title (about 65 percent of the acres) and conservation easements (about 35 percent of the acres). This alternative protects the most sensitive habitats and species but does not provide the connectivity and extensive habitat protection proposed in Alternative B.

Department of the Interior
U.S. Fish and Wildlife Service

FINAL
Cherry Valley National Wildlife Refuge
Feasibility Study and Environmental Assessment

December 2008

Prepared by:
U.S. Fish and Wildlife Service
National Wildlife Refuge System Northeast Region
300 Westgate Center Drive
Hadley, MA 01035

This Final Feasibility Study and Environmental Assessment is intended to help fulfill the purpose of the Cherry Valley National Wildlife Refuge Study Act of 2006 to complete a study evaluating fish and wildlife habitats in Cherry Valley, Pennsylvania, for their proposed acquisition by the U.S. Fish and Wildlife Service for inclusion in the National Wildlife Refuge System. Upon release of the draft document, public meetings were held and the draft document was available for comment between October 31 and December 5, 2008. After the comment period, comments received were summarized, and, where appropriate, have been addressed in this Final Study Report and Environmental Assessment.

Executive Summary

The Final Cherry Valley National Wildlife Refuge Study Report and Environmental Assessment (Final EA) helps fulfill the purpose of the Cherry Valley National Wildlife Refuge Study Act of 2006 to complete a study evaluating fish and wildlife habitats within Cherry Valley, Pennsylvania, for their potential inclusion by the U.S. Fish and Wildlife Service (Service, we, our) in the National Wildlife Refuge System. Consideration of a refuge within Cherry Valley is largely based on its known wildlife and natural habitat resources.

If creation of a refuge is approved, a boundary line for the refuge would be established that authorizes acquisition of land within that boundary. Landowners within a refuge acquisition boundary are under no obligation to sell their property to the Service. The Service would only acquire land from willing sellers, and can make offers to purchase land from or enter into management agreements with willing landowners within the approved boundary. A new refuge would officially be created upon acquisition of the first parcel of land within the acquisition boundary. Management of a new refuge would follow thereafter, initially under a Conceptual Management Plan, and ultimately under a more detailed Comprehensive Conservation Plan.

The National Environmental Policy Act of 1969 (NEPA) requires federal agencies to consider the environmental effects of any proposed federal action, as well as reasonable alternatives to the proposed federal action, prior to initiating the federal action. Creating a new refuge is a federal action; therefore, this document has been structured as an Environmental Assessment to meet the requirements of NEPA and the Cherry Valley National Wildlife Refuge Study Act. The Service accepted public comments on the Cherry Valley National Wildlife Refuge Draft Feasibility Study and Environmental Assessment (Draft EA) during public meetings in November 2008 and a 36-day comment period. Comments received were summarized, and, where appropriate, have been addressed in this Final EA**.** This Final EA and supporting documents will be submitted to the Director of the U.S. Fish and Wildlife Service for additional review and approvals.

The Final EA provides an "Introduction" and is presented in six chapters: 1. Study Purpose and Planning Considerations, 2. Affected Environment, 3. Alternatives, 4. Environmental Effects, 5. List of Preparers, and 6. Consultation and Coordination with Others. It also includes a number of appendices that provide further information on the study. The essential outline of the study enables the reader to understand the reason for the study, where the proposed refuge may be established, why Cherry Valley is being evaluated for a national wildlife refuge, what various options or alternatives exist for creating a refuge, how lands might be acquired and managed, and what might be the results or effects of establishing a national wildlife refuge in the valley.

U.S. Representatives Paul Kanjorski (11th District of Pennsylvania) and Charles Dent (15th District) co-sponsored a bill (H.R. 5232) to study the valley for potential inclusion into the National Wildlife Refuge System, which was successfully passed as the Cherry Valley National Wildlife Refuge Study Act of 2006 as Title VI of H.R. 4957 (Public Law No.: 109-363). This act requires the Secretary of the Department of the Interior to submit a report containing the results of the study to the Committee on Resources, U.S. House of Representatives, and to the Committee on Environment and Public Works, U.S. Senate. Proposing the creation of a new refuge is a federal action subject to NEPA, which requires that all federal agencies proposing an action consider the environmental effects of the action, and that alternatives to the proposed federal action be considered. This Final EA was developed in concert with relevant laws and policies of the Service and the National Wildlife Refuge System, along with existing fish and wildlife conservation plans that might be influenced by a refuge in the valley. This Final EA also considers the suggestions, comments, and issues raised during public meetings held on the potential refuge in March and November 2008, and during the public comment period on the Draft EA.

This study offers proposed refuge purposes, vision, and goals (Chapter 1 – Study Purpose and Planning Considerations). It also presents a detailed description of the physical, biological, and socioeconomic environment within which the study takes place, thus defining the area that may be affected by a refuge (Chapter 2 – Affected Environment). Most important, the study proposes the creation of a refuge, which is believed by the Service to be the best alternative for fulfilling the intent of the Study Act, and the proposed refuge purposes, vision, and goals (Chapter 3 –Alternatives). In addition to the proposed refuge, two other alternatives are offered. Environmental impacts, including to the physical environment, biological resources, and the socio-economic environment in Cherry Valley are also evaluated (Chapter 4 – Environmental Consequences).

The proposed refuge purposes, vision, and goals are first presented in Chapter 1. Purposes establish the legal foundation for a refuge. A vision offers a description of the desired future conditions envisioned for a refuge. Goals are broad statements of management intent. Ultimately, goals drive management action. The proposed goals for a Cherry Valley National Wildlife Refuge are:

> Goal 1. Protect and enhance habitats for federal trust species and species of management concern, emphasizing migratory birds and species listed under the federal Endangered Species Act, along with protection of wetlands and Kittatinny Ridge habitats.
>
> Goal 2. Create opportunities for hunting, fishing, wildlife observation and photography, and environmental education and interpretation, while promoting activities that complement the purposes of the refuge and other protected lands in the region.

Goal 3. Promote science, education, and research through partnerships to inform land management decisions and encourage continued responsible stewardship of the natural resources of Cherry Valley.

The Cherry Valley Study Act Boundary, comprised of approximately 30,000 acres in southeastern Monroe County, Pennsylvania, harbors several nationally-rare ecosystems, several federally-listed, endangered or threatened species, and over 30 plant and animal species considered by the Commonwealth of Pennsylvania as species of conservation concern (Chapter 2. Affected Environment). A diverse mosaic of habitats, including extensive forests along the Kittatinny Ridge, wetlands along Cherry Creek, and pastures scattered throughout the valley, have helped to sustain diverse wildlife populations, all within a two hour drive of more than 20 million people. Among the outstanding conservation priorities in the valley is one of the largest known collections of bog turtle populations, important foraging habitats for every raptor species that migrates along Kittatinny Ridge, and globally rare calcareous fen habitats.

The three alternatives considered are:

Alternative A. -- *"*No Refuge*"* -- This is the No Action alternative required by NEPA and serves as a baseline to which other alternatives are compared. In this alternative, there would be no new refuge and no designated acquisition boundary. Habitat protection and management would continue to be done by existing organizations and government programs. Currently there are 6,313 acres of lands protected by agricultural easements, private conservation organizations, and municipal, state, and federal ownerships within Cherry Valley. Of these, 4,811 acres contain 12 of the defined Cherry Valley ecosystems. There would be no new opportunities for refuge-based, wildlife-dependent public uses, partnerships, or scientific research.

Alternative B -- "Diverse Habitat Complex" -- This is the Service's preferred action, and is the alternative we are recommending to the Regional Director for implementation. It proposes an acquisition boundary to include up to 20,466 acres containing portions of 13 of the valley and ridge's defined ecosystems. Protection of lands would be accomplished through fee title (about 50 percent of the acres) and conservation easements (about 50 percent of the acres). This alternative would provide protection for more extensive habitat areas than the other alternatives, and would better enable the Service to meet the needs of both rare and more common species of wildlife. It would offer more substantial opportunities for compatible public uses than either Alternative A or C, and would also enable refuge-based partnerships and scientific research.

Alternative C --"Wetlands and Ridge Forests" -- This alternative proposes an acquisition boundary of up to 14,124 acres containing portions of 12 of the valley

and ridge's defined ecosystems. Protection of lands would be done through fee title (about 65 percent of the acres) and conservation easements (about 35 percent of the acres). It would offer opportunities for wildlife management, compatible public uses, and new refuge-based partnerships and scientific research, although these opportunities would be less than those for Alternative B.

Environmental effects of creating a refuge (Chapter 4) in the valley are described for each of the three alternatives. Environmental effects are described in broad categories – physical (air, water, soil, and sound), biological (habitats and species), and socioeconomic (public use, land use, tax revenue, and cultural and historic resources), providing essential background information for assessing potential effects on that environment due to the establishment of a refuge in the valley. Providing a comparison of potential effects due to each alternative provides the Service and the public with important information about what may be the best way to protect valuable wildlife resources within Cherry Valley, yet remain sensitive and knowledgeable about how those land protection measures, and subsequent management activities, may affect the valley. Generally, we concluded that the environmental effects of establishing a refuge in Cherry Valley would be positive for all of the physical, biological, and socioeconomic aspects noted above, although we recognize that refuge management activities and public use activities could have some negative effects on the valley habitats. The effects of not creating a refuge could exacerbate negative effects that already exist because of expanding changes in land use with associated impacts to air and water quality, noise levels, displacement of valuable habitats, and lost opportunities for wildlife-dependent recreational opportunities (e.g., hunting and fishing).

The Final EA also presents a final Conceptual Management Plan, a final Land Protection Plan, and a final Realty Feasibility Study in the appendices. The final Conceptual Management Plan provides general, interim management direction for the proposed new refuge. It identifies proposed purposes, interim goals, management objectives, and potential staffing structure for a refuge. It also addresses any pre-existing, compatible, and wildlife-dependent recreational uses that we would allow to continue (on an interim basis) on any land acquired for a refuge. The purposes of the final Land Protection Plan are to provide landowners and the public with an outline of Service policies, priorities, and protection methods for land in the proposed refuge area, assist landowners in determining whether their property lies within the proposed refuge boundary, and inform landowners about our long-standing policy of acquiring land only from willing sellers. The final Realty Feasibility Study provides a broad estimate of the cost to acquire lands, waters, and interests that have been deemed appropriate for refuge status under the preferred action, recognizing that land protection occurs over fairly long periods of time and that not all lands within an approved refuge acquisition boundary are suitable for wildlife conservation.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Introduction

The United States National Wildlife Refuge System is the world's largest collection of lands and waters set aside specifically for conserving wildlife and protecting ecosystems. Currently, 548 national wildlife refuges encompassing over 95 million acres are part of the national network. Refuges are found in every state and several island territories. Each year, more than 40 million visitors hunt, fish, observe and photograph wildlife, or participate in environmental education or interpretation activities on refuges. Currently, there are two refuges in Pennsylvania, the Erie National Wildlife Refuge in the extreme northwest part of the State and the John Heinz National Wildlife Refuge just outside Philadelphia along the Delaware River. Detailed information about the National Wildlife Refuge System can be found on the U.S. Fish and Wildlife Service's (Service) website (http://www.fws.gov/refuges/).

John Heinz National Wildlife Refuge

This Final EA assesses the feasibility of creating a new refuge in Cherry Valley, Pennsylvania, and includes a specific proposal for refuge creation. It was prompted by the Cherry Valley National Wildlife Refuge Study Act of 2006 (Title VI in Public Law No: 109-363, see also Appendix A) and prepared by National Wildlife Refuge System staff from the Service's Northeast Region, with assistance from numerous other agencies, organizations, and individuals.

Our consideration of a refuge within Cherry Valley is based on its wildlife and natural habitat resource values. Cherry Valley lies within the Delaware River watershed and is contained within the Ridge-and-Valley geologic province of the Appalachian Mountains. Cherry Valley is located primarily in Monroe County, with a narrow section running atop the Kittatinny Ridge in Northampton County, Pennsylvania. It lies along the eastern border of Pennsylvania nearly equally distant from Philadelphia and New York City and is valued for its rural landscape, recreational opportunities, and its wildlife resources. Cherry Valley encompasses land in the townships of Ross, Chestnuthill, Hamilton, Stroud, Smithfield, and Delaware Water Gap Borough. The valley currently supports, or has supported in the past, several nationally-rare ecosystems, five federally-listed, threatened or endangered species, many migratory birds, and over 30 plant and animal species listed as threatened or endangered by the Commonwealth of Pennsylvania. It is recognized as one of the most unique and important areas for the federally-listed, threatened bog turtle (*Clemmys muhlenbergii),* migrating raptors, and inter-montane wetlands.

If creation of a national wildlife refuge is approved, a boundary line for the refuge would be established that authorizes the Service to protect land within that boundary. An approved refuge acquisition boundary identifies the important and sensitive habitat areas that qualify for inclusion in the National Wildlife Refuge System and, when included in a refuge, can be managed under the system's policies. Landowners within a refuge acquisition boundary are under no obligation to sell their property to the Service. We only acquire land from willing sellers, and can make offers to purchase land from or enter into management agreements with willing landowners within the approved boundary. The new refuge would officially be created upon acquisition of the first parcel of land within the acquisition boundary. Management of the new refuge would follow thereafter.

Land protection within the valley has been promoted by a variety of measures including a $25 million Monroe County open space bond initiative that has been exhausted due to land protection demand. These measures have been insufficient to protect the county's valuable wildlife habitats. Recognizing the valley's valuable wildlife habitat resources, residents, local elected officials, community leaders, and private conservation organizations within the community took action to encourage permanent protection of these areas within Cherry Valley as part of the National Wildlife Refuge System. Consequently, U.S. Representatives Paul Kanjorski (11th District of Pennsylvania) and Charles Dent (15th District) co-sponsored a bill (H.R. 5232) to study the valley for potential inclusion into the National Wildlife Refuge System. This bill was successfully passed as the Cherry Valley National Wildlife Refuge Study Act of 2006 as Title VI of H.R. 4957 (Study Act; see Appendix A).

This document fulfills Section 603 of the Study Act, titled: "Study of Refuge Potential and Future Refuge Land Acquisition," and is presented as an Environmental Assessment under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.; Stat. 852), as amended (NEPA). This document also adheres to relevant federal directives and National Wildlife Refuge System policies. These policies, some of which are briefly described in Chapter 1, are designed to guide decisions consistent with the National Wildlife Refuge System's overriding legislation – The National Wildlife Refuge Administration Act of 1966 , as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. 668dd-668ee).

The document is divided into six chapters and several appendices:

Chapter 1 – Study Purpose and Planning Considerations. This chapter provides an overview and describes the purpose and need for preparing this document and the decision the Service is intending to make, while setting the stage for the subsequent chapters and appendices. It describes the mandate of the Cherry Valley National Wildlife Refuge Study Act of 2006, evaluating the potential for a National Wildlife Refuge in Cherry Valley, and describes National Wildlife Refuge System policies, and national and regional conservation plans or directives that influenced this report.

Chapter 1 also presents our proposed vision and goals for the proposed refuge, discusses possibilities for refuge administration, explains the planning process we followed in developing this report, and describes the key issues, concerns, and opportunities identified that influenced the study.

Chapter 2 – Affected Environment. This chapter describes the valley's physical environment, habitats and species, and human environment. It provides a thorough description of the valley and its current features so that the beneficial and adverse effects of the proposed refuge can be weighed within the larger context of the broader Cherry Valley region, the Delaware River watershed, and the Appalachian Ridge-and-Valley geologic province.

Chapter 3 – Description of Alternatives. This chapter presents three alternatives for establishing a refuge in Cherry Valley, including our preferred action (Alternative B). The chapter presents a range of reasonable alternatives for establishing a refuge in Cherry Valley, thus fulfilling one of the tenets of NEPA. The three alternatives considered include:

- *Alternative A: No Refuge* -- This is the "No Action" alternative required by NEPA and serves as a baseline to which the other alternatives are compared.
- *Alternative B: Cherry Valley Diverse Habitat Complex* -- This is the Service's preferred action. It includes protection of up to 20,466 acres for a refuge.
- *Alternative C: Cherry Valley Wetlands and Ridge Forests Complex* -- This alternative proposes protection of up to 14,124 acres for a refuge.

Chapter 4 – Environmental Effects. This chapter evaluates possible environmental effects (beneficial and adverse) of implementing each of the alternatives so that the projected effects of establishing a refuge in the valley can be fully considered. Effects discussed cover the biological and physical environment, cultural features, and socio-economic considerations. Not only are effects discussed as beneficial or adverse, but also whether they are direct, indirect, cumulative, or unavoidable. Once effects are described, a determination can be made on whether creation of a new refuge would significantly affect the quality of the human environment, and whether there is any need to prepare an Environmental Impact Statement.

Chapter 5 – List of Preparers. This chapter documents writers and contributors to the Final EA.

Chapter 6 – Consultation and Coordination with Others. This chapter summarizes how the public and our partners were involved in the preparation of this document. Public involvement is a requirement of the Study Act and is a key component of the NEPA process.

Appendices – Additional information relevant to this document is provided in the various appendices, including a Conceptual Management Plan, a Land Protection Plan, a Realty Feasibility Study, and a report documenting the economic analysis.

1 Purpose and Planning Considerations

1.1 Purpose and Need

1.1.1 Purpose

The United States Fish and Wildlife Service (Service, we, our) is proposing the establishment of a national wildlife refuge (NWR, refuge) in Cherry Valley, Pennsylvania. The purpose of the refuge is to contribute to the mission and goals of the National Wildlife Refuge System (Refuge System) by:

1. Protecting and enhancing habitats for federal trust species and species of management concern, with special emphasis on migratory birds and species listed under the federal Endangered Species Act (ESA), along with protection of wetlands and the Kittatinny Ridge.
2. Creating opportunities for hunting, fishing, wildlife observation and photography, and environmental education and interpretation, while promoting activities that complement the purposes of the refuge and other protected lands in the region.
3. Promoting science, education, and research through partnerships to inform land management decisions and encourage continued responsible stewardship of the natural resources of Cherry Valley.

Alternative B is the Service's preferred action, and we are now proposing this alternative as the final agency action. After reviewing the analysis in this document, including the attached appendices and any public comments, the Regional Director will determine whether to formally recommend to the Director of the Service that a refuge be established in Cherry Valley. At that time, the document, including any revisions, will be submitted to Service's Director for final review and approvals.

1.1.2 Need

Male Scarlet Tanager

Finding Cherry Valley to be of unique value to numerous wildlife species and habitats, and recognizing strong community support for a refuge in the valley, the 109th Congress passed the Cherry Valley National Wildlife Refuge Study Act of 2006 (Study Act; see Appendix A), calling on the Secretary of the Department of the Interior (Secretary) to conduct a study: *"to evaluate the fish and wildlife habitat and aquatic and terrestrial communities located in Northeastern Pennsylvania and identified on the map entitled 'Proposed Cherry Valley National Wildlife Refuge – Authorization Boundary' dated February 24, 2005, for their potential acquisition by the United States Fish and*

Wildlife Service through donation, exchange, or willing seller purchase, and subsequent inclusion in a future Cherry Valley National Wildlife Refuge." The referenced study boundary map is shown in Figure 1-1.

The Study Act calls for a study to determine the benefits Cherry Valley provides to fish and wildlife diversity, threatened or endangered species, aquatic and wetland habitats, wildlife-dependent recreation, scientific research, and environmental education and interpretation. Additionally, the study is to determine how protecting habitats in the valley may support fulfillment of international obligations of the United States (U.S.) with respect to fish, wildlife, and their habitats (e.g., Migratory Bird Treaty Act of 1918). More specifically, the study will determine the total area of lands and habitats within the valley that are recommended for land protection and inclusion into the Refuge System, up to a maximum of 30,000 acres.

The Study Act requires the Secretary to submit a report containing the results of the study to the Committee on Resources, U.S. House of Representatives, and to the Committee on Environment and Public Works, U.S. Senate. The report is to include: 1) a map that identifies and prioritizes specific lands, waters, and interests therein for future acquisition, and that delineates an acquisition boundary, for a potential Cherry Valley NWR, 2) a cost estimate for the acquisition of all lands, waters, and interests therein that are appropriate for refuge status, and 3) an estimate of potentially available acquisition and management funds from non-federal sources.

The Final Cherry Valley National Wildlife Refuge Feasibility Study and Environmental Assessment (Final EA) fulfills Section 603 of the Study Act. In addition, the Service is using this document to propose the creation of a new refuge . Creating a new refuge is a federal action; therefore, the Final EA is also structured as an Environmental Assessment (EA) to assist the Service in complying with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.; Stat. 852), as amended (NEPA). NEPA requires that any federal action consider the direct, indirect, and cumulative effects of the action, and that alternatives to the action be considered.

The Study Act also requires the Service to consult with others as the study is conducted (Sec. 603 (b)). Therefore, to formally initiate the study, the Service formed the Cherry Valley Study Team (CVST; Table 1-1). The CVST was instrumental in identifying priorities for the study, gathering essential information, assuring that necessary issues and concerns were addressed, and helping to coordinate with the public. Further details about the consultation process are provided in Chapter 6.

Table 1-1. Members of the Cherry Valley Study Team (CVST) created to provide information on establishing a national wildlife refuge in Cherry Valley, Pennsylvania.

Type of Organization	Name of Organization
Federal Agencies	U.S. Fish and Wildlife Service
	National Park Service
State Agencies	Pennsylvania Fish and Boat Commission
	Pennsylvania Game Commission
	Pennsylvania Natural Heritage Program
Local Agencies	Monroe County Conservation District
	Monroe County Planning Commission
Academic Institutions	East Stroudsburg University
	Northampton Community College
Non-governmental Organizations	The Nature Conservancy
	Pocono Avian Research Center

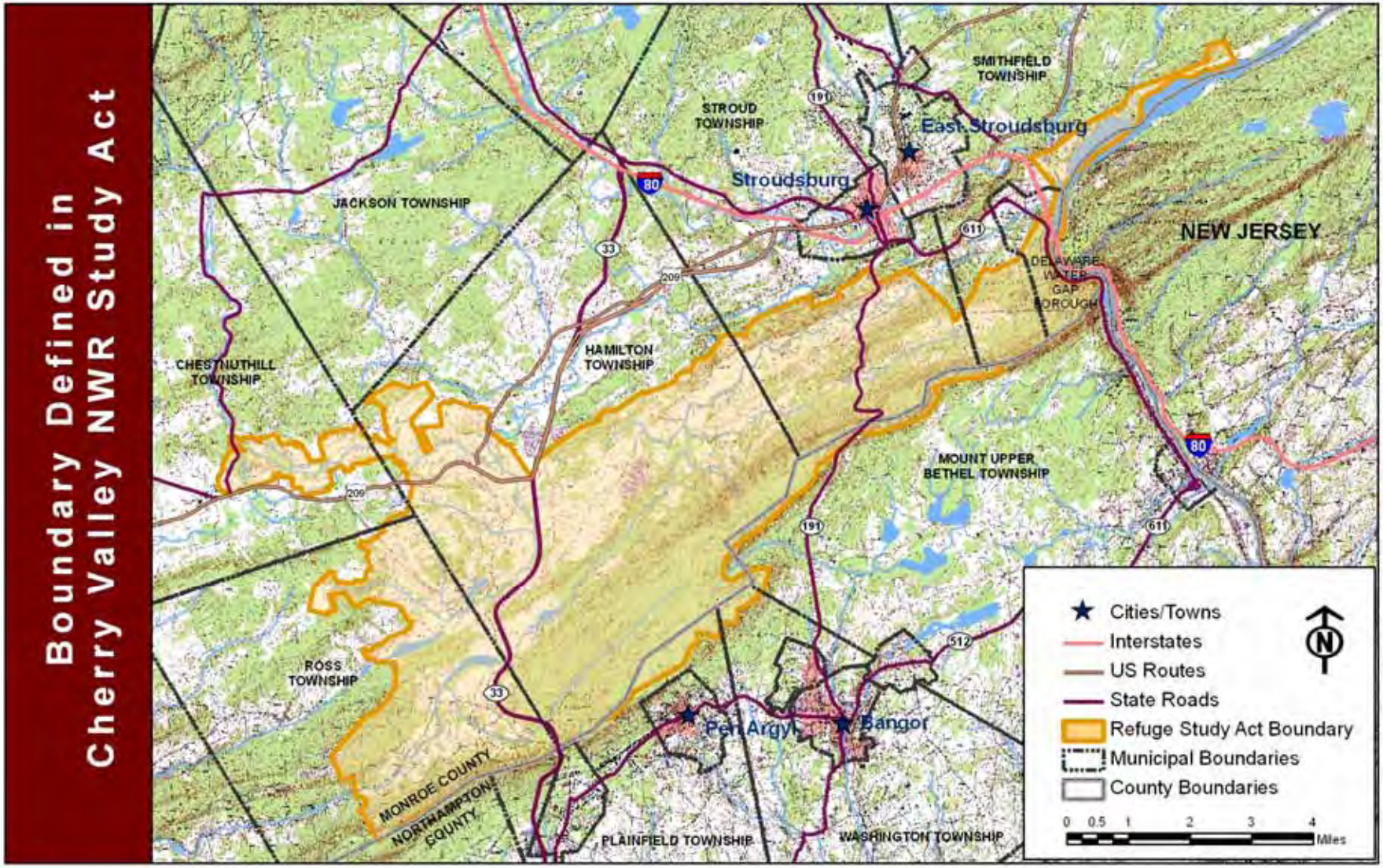


Figure 1-1. Study boundary defined in the Cherry Valley National Wildlife Refuge Study Act of 2006 (Title VI of H.R. 4957, Public Law No.: 109-363).

1.2 Regional Context

Cherry Valley is largely defined by the Delaware River watershed within the Ridge-and-Valley geologic province of the Appalachian Mountains (Figure 1-2). The Ridge-and-Valley province extends from northern New Jersey, westward into Pennsylvania, and southward into Maryland, West Virginia, Virginia, Tennessee, and Alabama (Nationmaster 2008). Cherry Creek and its 13,343 acre watershed define most of Cherry Valley. Fed by many tributaries originating from limestone aquifers, the creek meanders 15 miles through a steep-sided valley between Kittatinny Mountain to the south and Godfrey Ridge to the north, and eventually empties into the Delaware River Gap, a world-renowned geologic feature located at the confluence of Cherry Creek and the Delaware River. Most of the water resources in Cherry Valley can be attributed to groundwater. Additional details on the Cherry Valley environment are presented in Chapter 2 – Affected Environment.

1.3 The Service and the National Wildlife Refuge System: Policies and Mandates Guiding Planning

The Service, as part of the Department of the Interior, administers the Refuge System along with many other conservation programs. The Service 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 trust resources such as migratory birds and fish, species listed under the federal Endangered Species Act as amended (ESA), inter-jurisdictional fish, national wildlife refuges, wetlands, and certain marine mammals. The agency also enforces federal wildlife laws and international treaties on importing and exporting wildlife, assists states with their fish and wildlife programs, and helps other countries develop conservation programs. The Service Manual contains the standing and continuing directives on implementing our authorities, responsibilities, and activities (http://www.fws.gov.directives/direct.html). The Service publishes special directives that affect the rights of citizens or the authorities of other agencies separately in the Code of Federal Regulations (CFR).

In 1997, Congress passed the National Wildlife Refuge System Improvement Act (Public Law 105–57) (Refuge Improvement Act), amending the National Wildlife Refuge System Administration Act of 1966. Among other things, the Refuge Improvement Act states that the Refuge System must focus on wildlife conservation, and it established a unifying mission for the Refuge System:

> 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.

Figure 1-2. Regional location of the study act boundary defined in the Cherry Valley National Wildlife Refuge Study Act, Pennsylvania

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 refuges. The Refuge Improvement Act established a foundation for Refuge System policies used to effectively implement the Refuge System. These policies are described briefly below and can be found at http://www.policy.fws.gov/library/00fr62483.pdf.

1.3.1 Service Policies

Policy on the National Wildlife Refuge System Mission, Goals, and Purposes (601 FW 1) sets forth the Refuge System mission noted above, how it relates to the Service mission, and explains the relationship of the Refuge System mission, and the purpose(s) of each unit in the Refuge System. In addition, it identifies the following Refuge System goals: conserve a diversity of fish, wildlife, and plants; develop and maintain a network of habitats; conserve those ecosystems, plant communities, and wetlands that are unique within the United States; provide and enhance opportunities to participate in compatible, wildlife-dependent recreation; and, help to foster public understanding and appreciation of the diversity of fish, wildlife, and plants and their habitats. This policy also establishes management priorities for the Refuge System: conserve fish, wildlife, and plants and their habitats; facilitate compatible wildlife-dependent recreational uses; and, consider other appropriate and compatible uses.

Refuge System Planning Policy (602 FW 1, 2, 3) provides guidance for Refuge System planning, including Comprehensive Conservation Plans (CCPs) and step-down management plans. This policy helps to ensure that wildlife comes first in the Refuge System, and that refuge management reflects the Refuge System mission and purpose(s) for which each refuge was established. Among other features, this policy ensures NEPA compliance, including ensuring that opportunities to participate in the refuge planning process are available to our other programs; federal, state, and local agencies; tribal governments; conservation organizations; adjacent landowners; and the public. It also states that the Service will manage all refuges in accordance with an approved CCP.

Appropriate Use Policy (603 FW 1). This policy is used to decide whether various uses are appropriate on a refuge. 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 also clarifies and expands on the compatibility policy (see below), which describes when refuge managers should deny a potential use without determining compatibility. 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.

Compatibility Policy (603 FW 2). The Refuge Improvement Act is the key legislation regarding management of public uses and compatibility with wildlife conservation on

refuges. The Refuge Improvement Act declares that all existing or proposed public uses of a refuge must be compatible with refuge purpose(s). After affirming that a proposed use is appropriate (see above), 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). This act also stipulates six wildlife-dependent public uses that are to receive enhanced consideration in CCPs: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. Compatibility determinations for select public uses on a proposed Cherry Valley NWR can be found as an Attachment to the Conceptual Management Plan (Appendix B) along with additional information on the process.

Maintaining Biological Integrity, Diversity, and Environmental Health Policy (601 FW 3) provides guidance on maintaining or restoring the biological integrity, diversity, and environmental health of the Refuge System, including the protection of a broad spectrum of native 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(s).

Wildlife-Dependent Recreation Policy (605 FW 1). The Refuge Improvement Act establishes that six compatible wildlife dependent recreational uses (i.e., hunting, fishing, wildlife observation, photography, environmental education and interpretation) are the priority general public uses of the Refuge System, and are to receive enhanced consideration over other public uses in refuge planning and management. These often are referred to as the "Big-6" public uses. This 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 participation in these priority public uses.

1.3.2 Laws and Mandates

Consideration of other laws and mandates is conducted during planning for a new refuge. Although Service and Refuge System policies and the purpose(s) of each refuge provide the foundation for its management, other federal laws, executive orders, treaties, interstate compacts, and regulations on conserving and protecting natural and cultural resources also affect how we select lands for inclusion into the Refuge System and ultimately how we manage refuges. Many of these are described in the Service's "Digest of Federal Resource Laws of Interest to the U.S. Fish and Wildlife Service" (http://www.fws.gov/laws/lawsdigest/indx.html). As required, the Service would adhere to these laws and mandates upon creation of a new refuge in Cherry Valley.

Federal laws require the Service to identify and preserve its important historic structures, archaeological sites, and artifacts. NEPA mandates our consideration of cultural resources in planning federal actions. The Refuge Improvement Act also requires consideration of archaeological and cultural values. Some additional laws that pertain to cultural, archaeological, and historic resources are described below:

The Archaeological Resources Protection Act (16 U.S.C. 470aa–470ll; Pub.L. 96–95) establishes protections for archaeological resources on federal or Native American lands.

The Historic Sites, Buildings and Antiquities Act (16 U.S.C. 461–462, 464–467; 49 Stat. 666, as amended by Pub.L. 89–249, 79 Stat. 971), popularly known as the Historic Sites Act, declares it a national policy to preserve historic sites and objects of national significance, including those located on refuges (e.g., National Historic and Natural Landmarks). Implementation of this act is strengthened by provisions of *The Archeological and Historic Preservation Act* (16 U.S.C. 469–469c; Pub.L. 86–523; 74 Stat. 220, as amended by Pub.L. 93–291, 88 Stat. 174).

The National Historic Preservation Act of 1966 (16 U.S.C. 470–470b, 470c–470n), Pub.L. 89–665, 80 Stat. 915) provides for the preservation of significant historical features (buildings, objects and sites) through a grant-in-aid program to the states. It establishes a National Register of Historic Places and a program of matching grants under the existing National Trust for Historic Preservation (16 U.S.C. 468–468d).

The Service also owns and cares for some museum properties. The most common are archaeological, zoological, and botanical collections, historical photographs, historic objects, and art. Each refuge maintains an inventory of its museum property. The Service ensures that those collections will remain available to the public for learning and research.

Other resource laws are also integral in refuge planning and may play an important role in refuge establishment or management, notably: Migratory Bird Treaty Act (MBTA; 16 U.S.C. 703-712), Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531–1544), as amended, The Wilderness Act of 1964 (16 U.S.C. 1131–1136), and The Wild and Scenic Rivers Act of 1968 (16 U.S.C. 1271-1287).

Chapter 4, “Environmental Effects,” evaluates this document’s compliance with the legislation noted above (e.g., MBTA), the Clean Water Act of 1977 as amended (33 U.S.C. 1251, et seq.; Pub.L. 107–303), and the Clean Air Act of 1970 as amended (42 U.S.C. 7401 et seq.). Finally, we designed this Final EA to comply with NEPA and the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500–1508).

1.4 Conservation Plans and Initiatives Guiding Planning

Refuge planning must consider conservation goals and objectives of existing ecosystem plans for the landscapes in which the refuges are located to determine how a refuge can best contribute to the functioning of the ecosystems. The Service must coordinate refuge planning with other governments, other government agencies, nongovernmental organizations, and, to the extent practicable, refuge plans will be consistent with the fish and wildlife conservation plans of the state and the conservation programs of tribal, public, and private partners within the ecosystem. The following plans were considered while developing this document.

1.4.1 Multi-Species and Regional Plans

State of Pennsylvania Wildlife Action Plan (2008). In 2001 U.S. Congress passed the Department of the Interior and Related Agencies Appropriations Act of 2002 which created the State Wildlife Grants (SWG) program. These grants are available to state fish and wildlife agencies "for the development and implementation of programs for the benefit of wildlife and their habitat, including species that are not hunted or fished." Each state had to develop a Wildlife Action Plan (WAP; officially known as a Comprehensive Wildlife Conservation Strategy) focusing on the species of greatest conservation need to be eligible for grants. Pennsylvania's WAP is a blueprint for the Pennsylvania Game Commission and Pennsylvania Fish and Boat Commission to effectively manage and protect game and nongame species and their habitats (Pennsylvania Game Commission and Pennsylvania Fish and Boat Commission 2008). The WAP highlights many sensitive and declining species, and begins to identify and prioritize the pressing research, management, and recovery needs of species and habitats of greatest conservation concern throughout Pennsylvania. Both commissions anticipate that interested individuals and organizations will join them in working toward the worthwhile goal of comprehensive fish and wildlife conservation in the Commonwealth.

Of the species listed as species of conservation concern in Pennsylvania's WAP, as many as 61 occur within or near the Cherry Valley study boundary. This includes at least 13 of the 37 species identified in the WAP as Pennsylvania's species of greatest conservation concern (Pennsylvania Game Commission and Pennsylvania Fish and Boat Commission 2008).

The Appalachian Mountain Bird Conservation Region (AMBCR) originated from the North American Bird Conservation Initiative (NABCI). NABCI is a coalition of many governmental agencies, private organizations, academic organizations, and private industry leaders in Canada, the United States, and Mexico. It was formed to address the need for coordinated bird conservation that will benefit all birds in all habitats. The AMBCR, often referred to as Bird Conservation Region (BCR) 28, is one of 37 BCRs across the United States. BCRs are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues.

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 water birds, shorebirds, waterfowl, and land birds, fills in knowledge gaps, and implements conservation actions through dynamic partnerships.

Cherry Valley lies within the AMBCR, which includes portions of 15 states and 11 Partners in Flight (PIF) physiographic regions and covers approximately 105 million acres. This region includes the Blue Ridge, the Ridge and Valley Region, the Cumberland Plateau, the Ohio Hills, and the Allegheny Plateau. The primary purposes of BCRs are to facilitate communication among the bird conservation initiatives; facilitate a regional approach to bird conservation; promote new, expanded, or restructured partnerships; and identify overlapping or conflicting conservation priorities. Members of the Appalachian Mountains Joint Venture partnership have developed the Appalachian Mountains Bird Conservation Initiative to guide AMBCR conservation priorities in the region (Appalachian Mountains Bird Conservation Partnership 2005).

The North American Waterfowl Management Plan (NAWMP) is designed to promote partnership-based habitat conservation for waterfowl and other wetland birds. It was first developed in 1996 and has been revised twice since, most recently in 2004 (NAWMP 2004). The NAWMP established "Joint Venture" partnerships across the continent. Joint venture partnerships tribal nations, local businesses, conservation organizations, individual citizens, and involving federal, state, and provincial governments are assembled for the purpose of protecting habitat within those areas. The 2004 plan among the United States, Canada, and Mexico outlines their strategy to restore waterfowl populations through habitat protection, restoration, and enhancement (NAWMP 2004). Cherry Valley falls within the Atlantic Coast Joint Venture (ACJV). The goal of the ACJV is to: "Protect and manage priority wetland habitats for migration, wintering, and production of waterfowl, with special consideration to black ducks, and to benefit other wildlife in the joint venture area." The ACJV Implementation Plan served as a basis for evaluating waterfowl management opportunities within the valley.

Partners in Flight Bird Conservation Plan: Physiographic Area 17, Northern Ridge and Valley. In 1990, 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. Cherry Valley lies in the Northern Ridge-and-Valley Physiographic Province, Bird Conservation Area 17, which is included in the AMBCR. The goal of each PIF plan is to ensure long-term maintenance of healthy populations of native birds, primarily non-game landbirds. Within each physiographic area, the plans rank bird species according to their

conservation priority, describe desired habitat conditions, develop biological objectives, and recommend conservation actions. Habitat loss, population trends, and vulnerability of a species and its habitats to regional and local threats are all factors used in the priority ranking.

North American Waterbird Conservation Plan (2002). This plan represents a partnership among individuals and institutions with the interest in and responsibility for conserving colonial nesting waterbirds and their habitats (Kushlan et al. 2002). Its primary goal is to ensure that the distribution, diversity, and abundance of populations and habitats of breeding, migratory, and non-breeding waterbirds are sustained or restored throughout the lands and waters of North America, Central America, and the Caribbean (Kushlan et al. 2002). It provides a framework for conserving and managing colonially nesting water-dependent birds, and facilitates continent-wide planning and monitoring, national, state, and provincial conservation, regional coordination, and local habitat protection and management.

In 2006, the Mid-Atlantic New England Working Group began drafting the Waterbird Conservation Plan for the Mid-Atlantic/New England/Maritimes (MANEM) Region (MANEM Waterbird Working Group, in prep.). This plan, being implemented between 2006 and 2010, contains technical appendices on (1) waterbird populations including occurrence, status, and conservation needs, (2) waterbird habitats and locations within the region that are crucial for waterbird sustainability, (3) MANEM partners and regional expertise for waterbird conservation, and (4) conservation project descriptions that present current and proposed research, management, habitat acquisition, and education activities. Summarized information on waterbirds and their habitats provides a regional perspective for local conservation action.

U.S. Shorebird (2001, 2nd Edition) and North Atlantic Regional Shorebird (2000) Plans
Concerns about shorebirds led to the creation of the U.S. Shorebird Conservation Plan (Brown et al. 2001). Developed in a partnership with individuals and organizations throughout the United States, the plan presents conservation goals for each U.S. region, identifies important habitat conservation and research needs, and proposes education and outreach programs to increase public awareness of shorebirds and of threats to them. The North Atlantic Regional Shorebird Plan was created to help address specific regional priorities (Clark et al. 2000).

Birds of Conservation Concern Plan (2002) – Northeast Region, U.S. Fish and Wildlife Service. The Birds of Conservation Concern Plan (BCC) identifies nongame migratory birds that, without strong conservation action, are likely to become candidates for listing under the ESA (USFWS 2002a). 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 to help us focus on which species might warrant special management attention.

Conservation Plan for the Kittatinny Ridge (2006). In 2006, Audubon Pennsylvania published the "Conservation Plan for the Kittatinny Ridge in Pennsylvania" designed to summarize what is currently known about the cultural and natural resources of the Kittatinny Ridge through Pennsylvania, and to provide recommendations on strategies and priorities for protecting the ridge corridor for people and for ecological integrity (Audubon Pennsylvania 2006). The 150-mile long Kittatinny Ridge is recognized as a globally significant migration flyway, concentrating up to 20,000 migrating fall raptors every year. This ridge is home to the world's first conservation area for birds of prey, Hawk Mountain Sanctuary, established in 1934 solely to protect migratory raptors. In 1978 the Pennsylvania Game Commission designated the entire length of the Kittatinny Ridge in Pennsylvania as the "Kittatinny Ridge Birds of Prey Natural Area." Cherry Valley lies northeast of the Hawk Mountain Sanctuary.

The 2006 "Conservation Plan for Kittatinny Ridge Conservation Corridor" describes the value of the ridge in detail and includes protection of ridge habitat as a critical priority (Audubon Pennsylvania 2006). The ridge serves as migration habitat for at least 16 species of North American raptors, including peregrine falcon, bald eagle, broad-winged hawk, Northern goshawk, and black vulture. There are 12 recognized hawk watching sites along the ridge. The large blocks of unfragmented forest throughout the ridge also serve as key breeding sites for many interior-forest birds, including ruffed grouse, wood thrush, ovenbird, scarlet tanager, cerulean warbler, worm-eating warbler, Louisiana waterthrush, Acadian flycatcher, and many others. Some of these are species of conservation concern that may be on the brink of being threatened or endangered, or are on the Audubon National Bird Conservation WatchList (Butcher et al. 2007).

The ridge suffers from loss of habitat, notably through residential and commercial changes in land use, and energy and mining development, and is challenged with over abundant white-tailed deer and invasive species. Recommendations from this plan focus on improving scientific knowledge, land protection, enhanced public policy and involvement, and strengthened environmental education.

Partners in Amphibian and Reptile Conservation (PARC) was created in response to the increasing national declines in amphibian and reptile populations. PARC members include diverse government agencies, conservation organizations, universities, zoological parks and nature centers, pet traders, private industries, and environmental consultants. Its five geographic regions—Northeast, Southeast, Midwest, Southwest and Northwest—focus on regional challenges in amphibian and reptile conservation. Regional working groups allow for region-specific communication. PARC published "Habitat Management Guidelines for Amphibians

and Reptiles of the Northeastern United States" in 2006 (Mitchell, Breisch, and Buhlmann 2006).

The National State Agency Herpetological Conservation Report (NHCR) is a summary report sponsored by PARC (PARC 2004). It provides a general overview of each state wildlife agency's support for reptile and amphibian conservation and research and includes lists of the amphibian and reptile species of concern for each state. The NHCR's purpose is to facilitate communication among state agencies and partner organizations throughout the PARC network to identify and address regional and national priorities for reptiles and amphibians. The next NHCR report will integrate a list of the PARC Species of Conservation Concern with each state's Wildlife Action Plan.

U.S. Fish and Wildlife Service – Fisheries Program Northeast Region Strategic Plan (2004). The Northeast Region Strategic Plan (USFWS 2004) is an extension of the Service's Fisheries Program Strategic Vision document (USFWS 2002b), describing more specifically how the Region will fulfill the goals and objectives identified in the Vision over five years (2004-2008). This plan, developed in cooperation with over 40 partners and stakeholders, addresses the decline of fish and other aquatic resources, and the economic impact of those declines. The plan is implemented with partners through annual project work plans.

U.S. Fish and Wildlife Service – Regional Wetlands Concept Plan (1990). In 1986, Congress enacted the Emergency Wetlands Resources Act (16 U.S.C. 3901(b)) to promote the conservation of our nation's wetlands. This 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 land protection by federal and state agencies using Land and Water Conservation Fund appropriations. In 1990, our Northeast Region completed a Regional Wetlands Concept Plan to provide more specific information about wetlands resources in the Northeast (USFWS 1990). It identifies 850 wetland sites that warrant consideration for land protection to conserve wetland values in our region. This plan identifies two sites within or near the Study Act boundary: one of these sites occurs within the Cherry Creek watershed and another occurs in the Aquashicola Watershed.

Appalachian Trail MEGA-Transect (2008). The goals of the Appalachian Trail (AT) MEGA-Transect are to enhance management and protection of the AT environment (Dufour and Crisfields 2008). The AT and its surrounding 250,000 acres of protected lands are a priceless ecological resource. AT lands harbor rare, threatened, and endangered species, encompass important water resources, and shelter wildlife. Threats to the environment of the AT (e.g., encroaching development, acid rain, invasive species, polluted water, and climate change) represent threats to the health of everyone downwind and downstream of the AT. Because of the magnitude of this project, partner and volunteer engagement is vital to this effort. Citizen scientists

will play an active role, participating in monitoring activities and providing policy-makers, scientists and land managers with the data needed to protect the AT. A Cherry Valley NWR may offer an opportunity to work collaboratively with this AT initiative.

1.4.2 Species-Specific Plans

Dwarf Wedgemussel Recovery Plan (1993). The dwarf wedgemussel (*Alasmidonta heterodon*) was federally-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" (USFWS 1993). Currently, the species is not known to occur in Cherry Valley, although it is documented in the Delaware River several miles upstream and downstream from Cherry Valley. It is likely that the valley offers potential habitat for this species. Surveys are needed to fully determine their presence, absence, or the possibilities for their introduction, along with the presence of their host fish, the tessilated darter (*Etheostoma olmstedi*). Besides listing goals and objectives and describing mussel ecology and life history, the Recovery Plan identifies specific, major recovery tasks.

Bog Turtle Northern Population, Recovery Plan (2001). The northern population of the bog turtle was listed as a threatened species under the federal ESA 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 (USFWS 2001). The recovery plan identifies eight specific recovery tasks: 1) protection through existing regulations, 2) secure long-term protection of bog turtle populations, 3) conduct surveys of known, historical, and potential bog turtle habitat, 4) investigate the genetic variability of the bog turtle throughout its range, 5) reintroduce bog turtles into areas from which they have been extirpated or removed, 6) manage and maintain bog turtle habitat to ensure its continuing suitability for bog turtles, 7) conduct an effective law enforcement program to halt illicit take and commercialization of bog turtles, and 8) develop and implement an effective outreach and education program about bog turtles.

Five bog turtle recovery units and their subunits are identified in the plan. Cherry Valley lies within the Delaware [river watershed] recovery unit, which is the most populated of the five units. The Delaware recovery unit is the most ecologically diverse of the five recovery units, encompassing inner Coastal Plain, Piedmont, river valleys, Appalachian plateau areas, and fens. It contains both glaciated and non-glaciated habitats. This unit contains the highest densities of roads and major urban areas and has the highest number of lost sites range wide. There is less agricultural pressure here; however, urban sprawl and habitat fragmentation are major conservation challenges, as is maintaining ground water quality and quantity. The goal for the Delaware unit is to protect 80 viable bog turtle populations and

sufficient habitat to ensure the sustainability of these populations. This recovery unit is divided into east and west subunits, of which Cherry Valley lies in the Delaware west subunit, consisting of the Delaware River watershed west of the Delaware River. To meet the recovery criterion for this unit, at least 20 populations must be protected in the Delaware West Subunit.

Indiana Bat (Myotis sodalis) Draft Recovery Plan (2007). In 1967, the federal government listed the Indiana bat (*Myotis sodalis*) as endangered under the Endangered Species Preservation Act of 1966 (80 Stat. 926; 16 U.S.C. 668aa(c)) because of declines in their numbers documented at their seven major hibernation sites in the Midwest. Although population numbers are down, surveys in most states' hibernation sites indicate that populations increased or at least remained stable in 2004 and 2005. In 2005, Indiana bats were found hibernating in areas near Hibernia and Mount Hope, New Jersey, areas less than 50 miles from Cherry Valley. While Indiana bats have not been documented in Cherry Valley since 1950, the proximity to known populations and presence of suitable habitat make it likely that this species uses the valley for summer roosting and foraging. The valley's Hartman's Cave may offer potential hibernation habitat for the species since it was the 1950 site location. The Service would implement recovery plan tasks (USFWS 2007c) for this species as appropriate if the Indiana bat was documented within the potential refuge boundary.

National Bald Eagle Management Guidelines (2007). In July 2007, the Service issued a final ruling to remove the bald eagle from the federal list of endangered and threatened species. The bald eagle remains under the protection of the Bald and Golden Eagle Protection Act (Eagle Act) and the Migratory Bird Treaty Act (MBTA). The Service developed National Bald Eagle Management Guidelines (USFWS 2007b) to advise landowners, land managers, and others who share public and private lands with bald eagles when and under what circumstances the protective provisions of the Eagle Act may apply to their activities. The guidelines help minimize impacts on bald eagles, particularly where people may constitute a "disturbance," which the Eagle Act prohibits. The guidelines are intended primarily as a tool for landowners and planners who seek information and recommendations on how to avoid disturbing bald eagles.

Conserving the Eastern Brook Trout: Action Strategies (2008). The eastern brook trout (*Salvolinus fontinalis*) is the only salmonid native to Pennsylvania and is the official state fish (EBTJV 2008a). In the U.S., brook trout are declining throughout their range (Hudy et al. 2005). Concern over this species lead state and federal agencies (including the Service and Pennsylvania Fish and Boat Commission), conservation groups, and academics from across their native range to form The Eastern Brook Trout Joint Venture (EBTJV) in 2004 (EBTJV 2007). The EBTJV has developed several documents, including *Conserving the Eastern Brook Trout: Action Strategies* (EBTJV 2008), to help prioritize and guide brook trout conservation and

restoration efforts in the U.S. As part of this document, Pennsylvania has identified specific goals and objectives for its brook trout population (EBTJV 2008). The Service would integrate its activities in Cherry Valley with state goals in this area whenever feasible.

1.5 The Refuge Planning Process

The Service initiated work on the study during the spring of 2007, formulating a general approach to accomplishing the task. Progress has been hampered since funding authorized by the Study Act (Sec. 603 (e)) was not appropriated by Congress. Nevertheless, the Service continued with the study with the assistance of many dedicated partners. Notably, the Service joined together with The Nature Conservancy to establish baseline information for the study evaluation. A mailing list and e-mail list of all known, interested individuals, groups, and organizations were developed to increase awareness of the proposal. In February 2008, we distributed copies of a study planning newsletter to everyone on that list.

Following initial efforts with The Nature Conservancy, the Service invited a number of representatives from select government agencies, universities, and conservation organizations to form the CVST already mentioned above. The CVST met in October and December 2007 to begin gathering relevant information for the study, and to discuss species and habitat priorities for a potential new refuge. The Service and the CVST also began to prepare for public meetings designed to inform private citizens and interested groups and organizations about the refuge proposal and to obtain public participation in the study process.

On March 26 and 27, 2008, two public meetings were held to solicit information about the potential refuge. Over 200 people attended the meetings. The March 26th meeting was attended by Representative Paul Kanjorski. Through the CVST meetings and public meetings, a number of general concerns, issues, and questions arose that were used to guide development of the Draft EA (see Section 1.9 Issues, Concerns, and Opportunities). The Draft EA was released for public review and comment on October 31, 2008. To provide opportunities for public comment on the Draft EA, the Service held two additional public meetings in November 2008 and opened a public comment period from October 31 through December 5, 2008.

Since the public meetings were held, the Service and the CVST have used all gathered information along with requirements of the Study Act, NEPA, and the Refuge Improvement Act and its policies to develop this Final EA, including the refuge alternatives described in Chapter 3. We have also developed a website to support study activities: www.fws.gov/northeast/planning/Cherry%20Valley/lcphome.html.

The information gathering process for the Draft EA is summarized in Chapter 6, and substantive comments on the Draft EA are specifically addressed in Appendix G. A

planning update newsletter announcing completion of the Final EA and supporting documents will be developed, posted on the website, and distributed to the mailing list as soon as possible.

1.6 Refuge Purposes

The Service, with assistance from the CVST, considered the purposes and intents of the Study Act along with longstanding legislation available to the Service for establishing refuges to develop t

1.7 Refuge Vision Statement

The CVST developed this proposed vision statement to provide a guiding philosophy and sense of purpose for a new refuge:

> *On the Cherry Valley National Wildlife Refuge, birds will freely migrate and raise their young in native habitats of forest, wetlands, and grasslands. Bog turtles will thrive in valley bogs, and other rare wildlife and plants will find a safe harbor. We will manage refuge lands and waters with an emphasis on trust species whose populations have declined, assisting them on the road to recovery.*
>
> *The refuge will serve as an outdoor classroom, where students of all ages will study nature's complexity, contributing to our understanding and appreciation of the natural world and the National Wildlife Refuge System. It will also serve as an outstanding area for scientific research intended to benefit this valuable ecosystem. All those who visit will find enjoyment in the presence of healthy and abundant fish, wildlife, and plants, and will leave with a renewed personal commitment to land conservation and stewardship.*
>
> *In partnership with others, we will contribute to Cherry Valley communities, helping renew the health and vitality of Cherry Valley and its vibrant landscape. We will complement the rich traditions of hunting, fishing, forestry and agriculture on Pennsylvania's eastern border.*

1.8 Refuge Goals

The CVST developed three goals after considering the proposed refuge purposes and vision statement, the findings of the Study Act, the missions of the Service and the Refuge System, and the mandates, plans, and conservation initiatives above. These goals are intentionally broad, descriptive statements of purpose. They highlight

elements of the vision for the refuge that we would emphasize in its future management.

Goal 1. Protect and enhance habitats for federal trust species and species of management concern, with special emphasis on migratory birds and species listed under the ESA, along with protection of wetlands and the Kittatinny Ridge.

This goal supports the principal findings of the Study Act (Sec. 602) on the need to protect important wildlife and associated habitats that are of special concern. It supports the essential purpose of the Refuge Improvement Act for conserving wildlife, and complements the mission of the Refuge System and the trust resource responsibilities of the Service.


Milton Friend / USFWS

Goal 2. Create opportunities for hunting, fishing, wildlife observation and photography, and environmental education and interpretation, while promoting activities that complement the purposes of the refuge and other protected lands in the region.

This goal supports a component of the Study Act (Sec. 603 (c)) to consider opportunities for wildlife-dependent recreation, and complements similar provisions in the Refuge Improvement Act and its associated Wildlife-Dependent Recreation Policy. It also provides for a new refuge to complement the AT, wherever possible.

Goal 3. Promote science, education, and research through partnerships to inform land management decisions and encourage continued responsible stewardship of the natural resources of Cherry Valley.

This goal also supports the Study Act's findings (Sec. 602) on the need to protect the unique geologic and water quality features of the valley, rare plant communities, and the need to offer the refuge as an outdoor laboratory for scientific research and environmental education. This goal also supports the Refuge Improvement Act, the Refuge System mission, and the Refuge System's policy entitled: "Maintaining Biological Integrity, Diversity, and Environmental Health Policy."

1.9 Issues, Concerns, and Opportunities

The Study Act (Sec. 603 (b)) and NEPA require consultation with the public and others as the study is performed to assure that interested parties are provided opportunities to participate and that the study benefits from information, concerns, or issues they may have. We define an issue as: any matter requiring management action. For example,

that may include actions related to a resource management problem, threat to a resource, an ongoing initiative, upcoming opportunity, conflict in public use, or a public concern. Issues arise from many sources, including the public, our staff, other Service programs, state agencies, other federal agencies, our partners, neighbors, user groups, or Congress.

The key issues derived from the CVST and public consultation, together with the Study Act requirements and the proposed refuge goals, form the basis for developing and comparing the management alternatives we analyze in Chapter 3. The wide-ranging opinions on how to address key issues while adhering to the Study Act and proposed refuge goals and objectives, contributed to the alternatives offered. Key issues are those the Service has the jurisdiction and authority to resolve.

1.9.1 Habitat and Species Management

The Refuge System's primary purpose is to conserve, protect, enhance, and restore wildlife and their habitats. This overarching purpose serves as the foundation for all that the Refuge System does. This Final EA accounts for how a new refuge in Cherry Valley may contribute to that broad purpose, how a refuge would fulfill the intent of the Study Act to protect important valley wildlife and habitats such as bog turtles and migratory birds, and how a refuge generally would help to protect federal trust resources and contribute to the mission of the Refuge System. Chapter 3 – Alternatives – presents how a new refuge would fulfill these needs, and Appendix B – Final Conceptual Management Plan – provides greater detail on species and habitat management priorities.

We heard from CVST members and many from the public about the urgency to protect essential habitat areas in the valley for the declining bog turtles, migratory birds, rare plant communities, wetlands, and game species. Several participants simply encouraged open space protection and others noted a need to incorporate a new refuge into a healthy landscape that also encouraged organic farming and related new industries. Others recognized the opportunity the refuge could provide for the native brook trout, American eel, and native mussels, including some potential in the future for the dwarf wedgemussel. The following species and habitat issues arose from the CVST and public meetings:

- What species and habitats are most in need of protection by a refuge?
- How would we protect valuable habitat in the valley during expanding changes in land use?
- Could we protect valuable habitats outside the Study Area?
- How could we enhance plant and animal inventories in the valley?
- How would we best protect, restore, and enhance valley wetlands?
- How might a new refuge manage invasive, exotic, and overabundant species?

1.9.2 Land Protection

Ongoing changes in land use and associated impacts that threaten the integrity of natural resources in the Cherry Valley area are increasingly a concern (see Chapter 2 Affected Environment, pages 2-40 and 2-41). Lands that once provided contiguous habitat are being sub-divided, primarily into residential lots. Although local communities and businesses may desire some of that development, the level of concern rises when those activities destroy or degrade important wildlife habitat, degrade water quality, restrict what was once public access to recreation areas, or detract from the valley's rural landscape. In addition, those changes elevate the potential threat from invasive and non-native plants, which are becoming increasingly widespread and difficult to control.

We heard directly from people who supported efforts to acquire and manage important habitat areas for inclusion in the Refuge System. Others were supportive as long as the Service would allow public use and access on those lands. Some individuals indicated that, if a refuge was approved, they would prefer lands be acquired primarily through the purchase of conservation easements, rather than purchase in full fee title. Others expressed concerns that the Service might take land out of the local tax base or might take agricultural land out of production, or possibly eliminate traditional uses such as hunting. We evaluate and address these concerns in Chapter 3 – Alternatives, Appendix B – Final Conceptual Management Plan, and Appendix G – Response to Comments.

A number of organizations, including state and federal agencies, are involved in protecting and conserving some lands in the valley. The Study Act, however, recognizes that there are additional lands, that are not protected, that may best contribute to wildlife conservation. We have worked with the CVST to identify sensitive wildlife habitat in need of protection or restoration, notably habitat benefitting trust resources. Service land protection, through either fee purchase or purchase of conservation easements from willing sellers, is one of the most important tools we use to conserve important areas of wildlife habitat (further details on land protection are available in Appendices E and F). The following issues and concerns arose about land protection and acquisition:

- Could lands outside the study area be considered for the refuge?
- Would a new refuge conflict with traditional agricultural land production or already planned developments in the valley, and could the Service lease land back to farmers?
- Would a new refuge affect organic farming, which is important to the valley and should be encouraged.
- How would the establishment of a refuge affect businesses such as expanding commercial developments, mining, and other resource extraction?
- How would the local tax base be affected? How would property values be affected?

- How should we prioritize lands for protection, and how would we manage the conservation easements purchased for the refuge?
- Would the Service use condemnation to acquire land for the refuge?
- Would land use change for areas owned by the National Park Service if a refuge was established?
- Is Hamilton Township changing zoning regulations as a result of the refuge study?

1.9.3 Public Use and Community Relations

A principal element of any refuge is to conserve wildlife for the continuing benefit of the American people. Our goal is for the refuge to become an integral part of the socioeconomic health and quality of life of the communities affected by it. Our challenge is to understand the visions of the respective communities and our role in them while adhering to our Refuge System mission. We also need to determine how best to nurture and cultivate mutually beneficial relationships using the resources we have available.

During public meetings we learned that many people are vaguely aware of the Refuge System, but are not necessarily knowledgeable about the opportunities and services that might be offered by a refuge. Some participants desire greater educational opportunities, others wanted hunting and fishing opportunities. Generally, more outdoor recreational activities were favored. Conversely, some also commented that the refuge should not permit hunting while others expressed that a new refuge should not limit current hunting activities, and that a new refuge should not be open to hunters from outside the valley. Yet others expressed feelings that these types of activities are the best way to increase community interest and involvement in the refuge. In response to those comments and the issues below, our alternatives evaluate a range of quality, wildlife-dependent recreational opportunities, and propose measures to promote Service visibility, community understanding, and support for refuge programs.

Some non-priority public uses may be allowed in order to facilitate wildlife-dependent public uses. For example, cross-country skiing and snowshoeing are not themselves priority public uses, but may be allowed to facilitate wildlife observation and photography, for example. There are other non-priority public uses such as jogging, bicycling, or horseback riding that some visitors would argue also facilitate priority public uses. These activities, however, often take place at a sensitive time of year when wildlife use the refuge for feeding, resting, migrating, or breeding, and the activities often cause unacceptable disturbance to wildlife. Usually there are opportunities for the public to partake in these kinds of activities on other public lands not far from a refuge. The following are key issues or concerns that arose about public uses and community relations:

- What specific opportunities could we provide for the community to enjoy a new refuge?
- How could a refuge increase education and stewardship about the valley?

- How and where could a refuge afford public access to valley lands?
- How would we find ways to complement activities of the Appalachian Trail?
- How could we maintain a vibrant farming community?
- Does the Service consider cultural resources when planning a refuge, if so how?
- It is important to educate new and existing landowners about preserving their property for generations to come.
- Are there ways for the refuge to be a multi-use area that people can use to hunt, fish, hike, bicycle, and ride horses?
- The refuge should not limit current hunting activities.
- How would the Service prevent trespass on private lands?
- If established, the refuge area has potential to be used as an outdoor classroom and natural laboratory where students can learn about the environment and scientists can conduct research.

1.9.4 Refuge Creation and Future Administration

Creating a new refuge stimulates a need for a dependable source of funding to assure success of the new refuge. The proposed refuge, if approved, would need to be managed and administered locally in some meaningful fashion and more broadly within the Northeast Region of the Service. Administration typically includes staffing, funding, travel, habitat management, planning, trails management, land protection, research, special use permits, facilities management, law enforcement, information management, visitor services, and community relations. Information on the potential administration of the proposed Cherry Valley NWR is available in Appendix B – Final Conceptual Management Plan. The following are key issues or concerns that arose about refuge creation and administration.

- How would costs for staffing and maintenance of the refuge be assured and managed?
- What administrative facilities or roads would be needed to manage the refuge?
- Could partnering with local government or conservation organizations be used to help manage a refuge?

2 Affected Environment

This chapter describes the Cherry Valley National Wildlife Refuge Final Feasibility Study and Environmental Assessment Study Area (Study Area), in Pennsylvania and its local and regional setting. The majority of the Study Area lies within southeastern Monroe County; however, the Study Area also includes a narrow strip of land along Kittatinny Ridge in Northampton County. This chapter also describes the valley's physical environment, habitats, species, and human environment. This description provides a thorough overview of the valley and its current features so that the effects of the study proposal (i.e., establishing a refuge) can be weighed within the larger context of Cherry Valley, Monroe County, the Delaware River Basin and the Appalachian Ridge and Valley province.

Based on comments received from the public meetings held in March 2008 along with discussions by the CVST, we decided that an area just outside the Study Act boundary, south of Highway 611 and north of the Delaware Water Gap, should be included within the Study Area (Figure 2-1). Notably, individuals familiar with the conceptual study area prior to it being incorporated into the Study Act boundary recognized that the area illustrated in Figure 2-1 was mistakenly omitted from the official Study Act boundary. Due to this apparent omission, an additional 1,500 acres located in this adjacent area were included in the various analyses. We believe including this land in the Study Area honors the intent of the Study Act and public expressions of support.

2.1 Physical Environment

Pennsylvania's Cherry Valley is carved out by Cherry Creek, which flows through the southeastern corner of Monroe County, Pennsylvania before feeding into the Delaware River (Figure 2-2). The 31,500-acre Study Area is topographically and geologically unique, and harbors several nationally-rare ecosystems (Noss et al. 1995), as many as five federally-listed threatened or endangered species (two historic), and over 30 plant and animal species of special concern that are listed as rare, threatened, or endangered by the Commonwealth of Pennsylvania (see Table 2-3). The valley's physical environment is discussed in more detail below.

2.2 Topography

The Study Area falls within the physiographic Appalachian Ridge and Valley province, which is characterized by long, parallel, sharp-crested ridges separated by narrow valleys. Elevations range from 300 feet in valley bottoms to just over 1,600 feet along ridge tops. Unfolding in a northeast-southwest direction across Pennsylvania's southern Monroe County, most of the Study Area falls within the province's Blue Mountain section, also known in the region as the Kittatinny Ridge. The Kittatinny Ridge forms the southern boundary of the proposed refuge and forms part of the Central Appalachians.

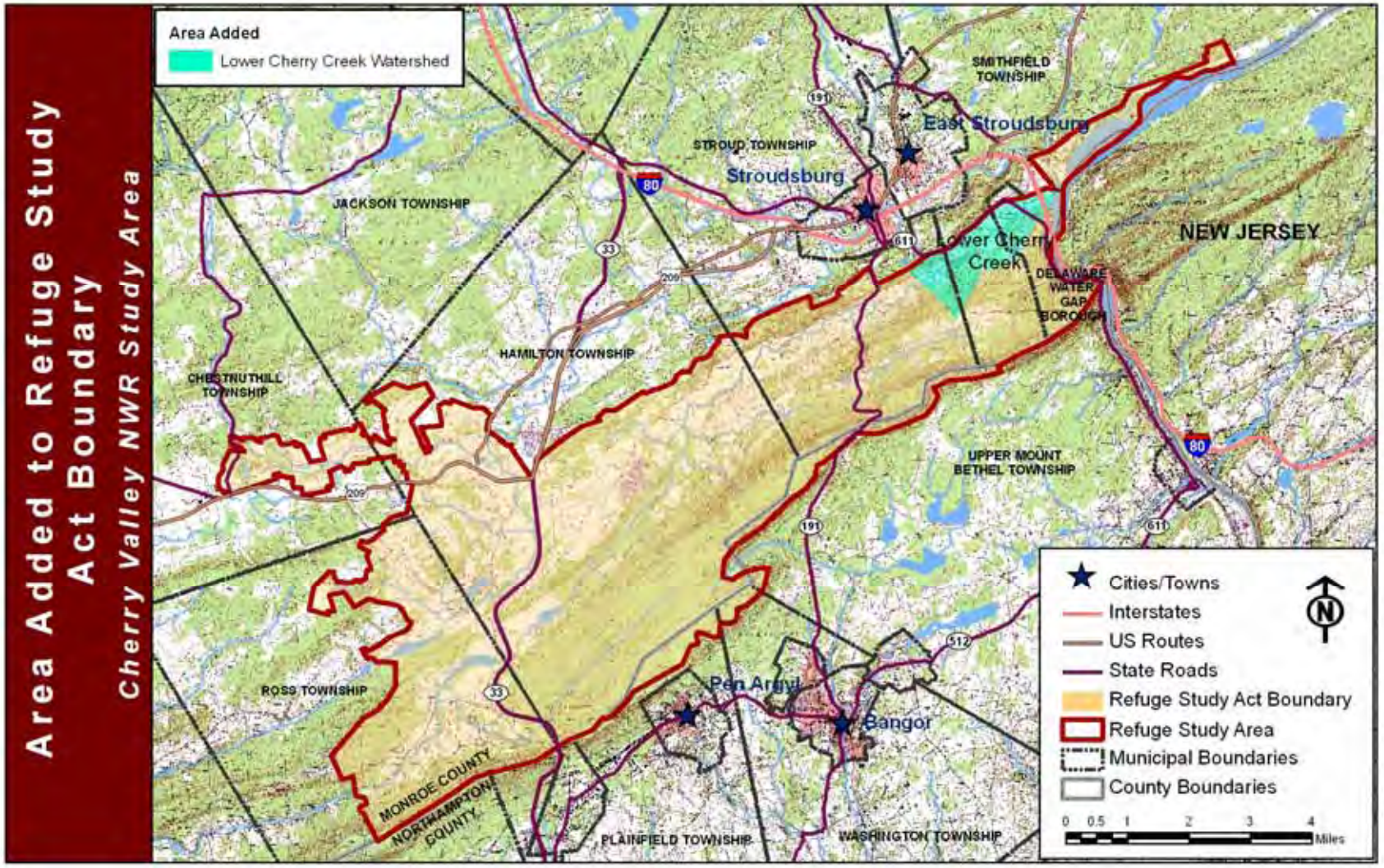


Figure 2-1. The Cherry Valley National Wildlife Refuge Study Act boundary and the Lower Cherry Creek addition included for this study. Together, these areas comprise the Cherry Valley National Wildlife Refuge Study Area. See text for a more detailed explanation.

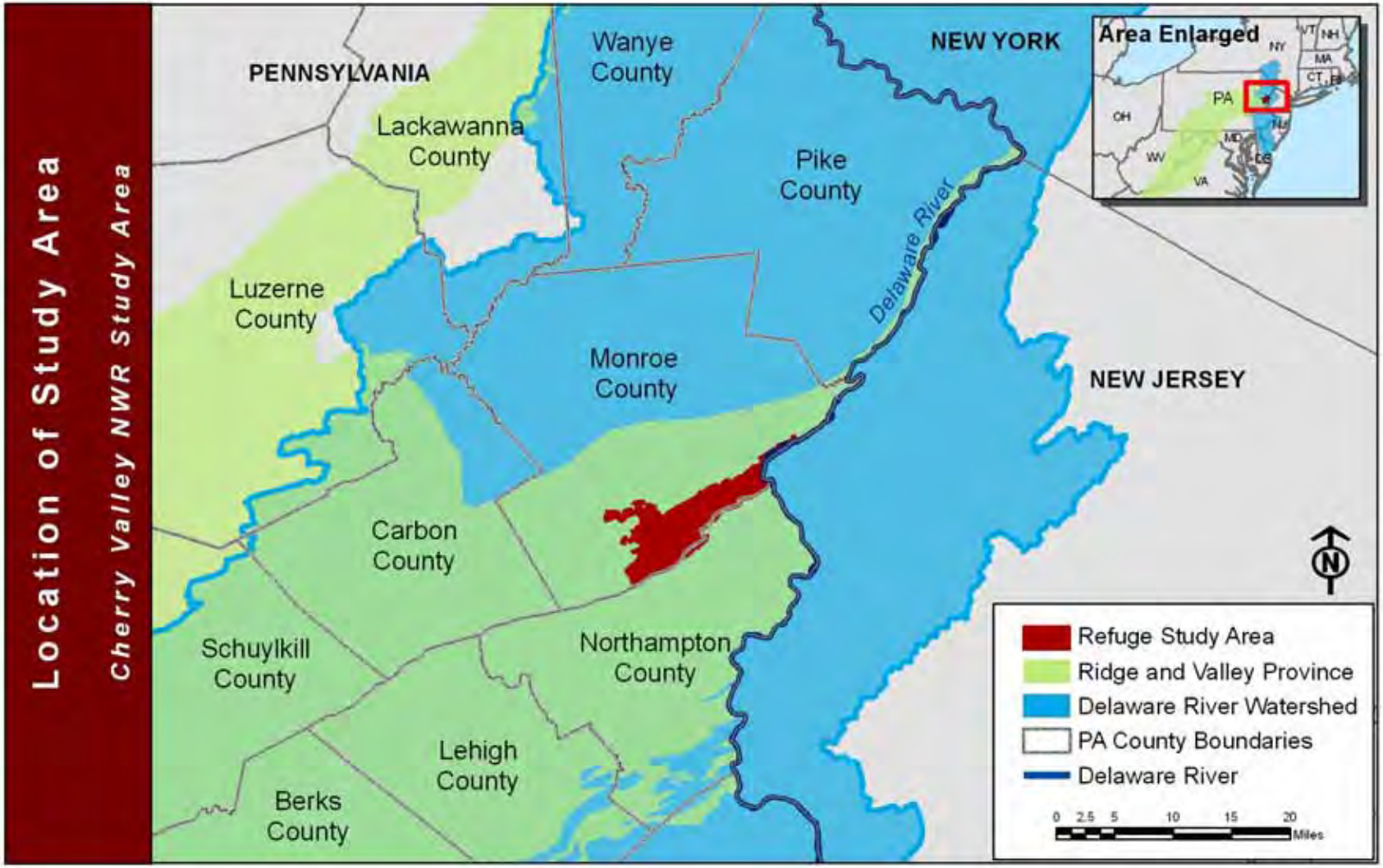


Figure 2-2. Location of the Study Area for a proposed Cherry Valley National Wildlife Refuge in relation to the Delaware River Watershed and the Ridge and Valley Province, Pennsylvania.

The Central Appalachians extend from northern New Jersey, westward into Pennsylvania, and southward into Maryland, West Virginia, and Virginia (BLOSS Associates 2004, Way 2002, Department of Conservation and Natural Resources [DCNR] 2008).

Cherry Valley is narrowly wedged between two major, and very different, geologic features to the north and south. To the south, on the other side of the Kittatinny Ridge, lies a portion of the 700-mile long Great Appalachian Valley, which has served as an important north-south travel route for humans and wildlife since prehistoric times. To the north rises the Pocono Glaciated Plateau.

2.2.1 Geology

Estimated to be as old as 480 million years, the Appalachians are characterized by thrusted faults, folds, ancient ocean floors and sedimentary and volcanic rock. These mountain ranges were once higher than today's Himalaya mountain range (U.S. Geological Survey 2008). In addition to the surrounding ridges, Cherry Valley offers abundant proof that a continental ice sheet existed during North America's last major glacial period taking place between 12,500 and 18,500 years ago. During that time, the Wisconsin Glacier terminal moraine, reaching 1,800 feet above the valley floor, began to recede northward, leaving several interesting features.

Side-by-side kames (knob-like conical hills) and kettle holes (depressions) cover the landscape. Glacial striae (scratches appearing on large boulders) abound in Cherry Valley. In some locations, glacial till and boulders cover the valley. At a place called Table Rock, the largest glacial groove in Pennsylvania measures six feet wide and seventy feet long (BLOSS Associates 2004).

Ridges and mountaintops located within the Study Area typically consist of sandstone and shale, with smaller amounts of limestone, diabase, granitic rocks and other rock types (Perles and Podniesinki 2004). One of the most prominent rock types in the Blue Mountain section includes the Shawangunk Formation, a mapped bedrock unit named after the Shawangunk Ridge in New York, where it is the dominant rock type.

Almost all other areas falling within the Study Area are covered with rapidly-weathering, loosely-packed silt, sand, and gravel sediments that were reshaped or deposited during glacial melting. Rock fragments in the glacial sediments are generally similar to the composition of the underlying bedrock and are thus assumed to be locally derived (Brodhead Watershed Association 2008). Colluvium (soil and rocks deposited at the base of steep inclines) decreases the topographic slope at the base of most hills throughout the basin. Alluvium (sediment deposited by flowing water) consists of sand, gravel, and cobbles from eroded till deposits and is common to many of the streams (BLOSS Associates 2004).

The limestone and dolostone in Cherry Valley have been extensively quarried for a variety of purposes including crushed stone and cement manufacturing. Several active quarries operate in the area today, including two within the Study Area. In fact, the Wisconsin Glacier terminal moraine is responsible for shaping conditions that have encouraged farming, vineyards, tree farms, trout hatcheries, and quarry operations in Cherry Valley.

2.2.2 Soils

There are five major soil types in the Study Area, and most are formed from glacial till (Table 2-1). Others are formed from a mixture of glacial till and residuum, a mixture of glacial till and colluvium, glacial outwash, recent stream alluvium, old stream alluvium and outwash, and organic material. Alluvial and recently originated organic materials are still being deposited.

Table 2-1. Soil Types in Cherry Valley, Pennsylvania.

Soil Names	Description
Lackawanna-Wellsboro-Oquaga	Nearly level to sloping, deep and moderately deep, well drained and moderately well drained soils underlain by reddish glacial till. Soil types range from Lackawanna, being well drained but slow permeating, Wellsboro, being moderately well drained with a high seasonal water table and Oquaga, being moderately deep and well drained. The Lackawanna, Wellsboro and Oquaga series were formed in glacial till derived from sandstone, siltstone, and shale.
Mardin-Bath-Volusia and Weikert-Hartleton	Make up a small portion of northeastern portion of Cherry Valley. In Cherry Valley, portions are gently sloping to sloping, shallow and deep, well drained soils underlain by gray to brown shale bedrock and glacial till and are derived of pre-Wisconsin glacial till and frost churned materials derived from shale, siltstone, and sandstone. The remainder is nearly level to sloping, deep, well drained to somewhat poorly drained soils underlain by brownish to gray glacial till and is formed in glacial till derived from sandstone, siltstone, and shale.

Soil Names	Description
Dekalb-Hazleton-Laidig	Sloping to moderately steep, moderately deep and deep, well drained soils underlain by brownish glacial till and colluvium. This type extends along the southern boundary of the Cherry Creek Watershed and is situated between Cherry Creek and the Kittatinny Ridge. The Hazelton series formed in pre-Wisconsin glacial till and colluvial material derived from sandstone, siltstone, and some shale. The Laidig series formed in colluvium derived from sandstone and shale. The Dekalb series formed in glacially influenced materials derived from sandstone, siltstone, and some shale.
Benson-Rock outcrop	This map unit extends along the northern edge of the Cherry Creek Watershed. Moderately steep to very steep, shallow, well drained soils and areas of rock outcrop underlain by calcareous and noncalcareous shale, slate, sandstone, and quartzite. Benson soils were formed in glacial till derived from limestone, calcareous shale, slate sandstone, and quartzite.
Wyoming-Chenango-Pope	Nearly level to sloping, deep, somewhat excessively drained and well drained soils underlain by glacial outwash and alluvium. Pope was formed in alluvium derived from sandstone, siltstone, and shale. The Wyoming series formed in glacial outwash derived from sandstone and siltstone with some shale. Chenango formed in outwash derived from sandstone and siltstone. This is the soil type that is adjacent to Cherry Creek, situated on terraces and floodplains. According to Bloss Associates and the Brodhead Watershed Association (2004), most of this area has been cleared and is used for crops.

Sources: United States Department of Agriculture 1981; BLOSS Associates and the Cherry Creek Sub-Association of the Brodhead Water Association 2004

2.2.3 Climate

Cherry Valley can be described as having a humid continental climate. Lower elevations experience cold winters, modest snowfall, and frequent thawing. Summers are humid and warm. Higher elevations have cooler, less humid summers. Winters may be cold and snowy with less frequent thawing. This contributes to persistent snow cover from December through March, especially on north-facing slopes.

The most accurate recorded climate history in the area is from the town of Stroudsburg, Pennsylvania, which has an approximate elevation of 479 ft above sea level. In this area, winters are cold with average minimum temperatures of -8.5C (16.7F) and average maximums of 1.7C (35.1F). During summer, temperatures are warm with an average minimum of 15.1C (59.2F) and an average maximum of 29.9C (85.8F). The average annual rainfall is 48 inches, with February typically the driest month (3 inches) and July the wettest (4.6 inches), making for a relatively equitable precipitation pattern (World Climate 2008). Annual snowfall ranges from 40-50 inches per year. The freeze-free season lasts between 140 and 180 days (Rossi 2002).

2.2.4 Hydrology and Water Quality

Water Resources

Cherry Creek is a second-order stream originating near Twin Ponds, south of the town of Saylorsburg, in Monroe County, Pennsylvania. Its 13,343 acre watershed defines most of Cherry Valley. Fueled by large and numerous tributaries erupting from limestone aquifers under Kittatinny Mountain to the south and Godfrey's Ridge to the north, the creek meanders for approximately 15 miles through a steep-sided valley and eventually empties into the Delaware River at the Delaware Water Gap, a world-renowned geologic feature (BLOSS Associates 2004). Cherry Creek descends about 370 feet from its source to its mouth.

While Cherry Creek is fed by numerous small streams and wetlands, most of the water resources in Cherry Valley are attributed to groundwater. As of 1990, groundwater accounted for 95 percent of the 6 to 20 million gallons of water used per day in Monroe County. In Monroe County, most water is accessed through springs, storage reservoirs fed by streams, or drilled wells (USDA 1981). Some of the largest yields come from artesian aquifers created by glacial deposits in the underlying bedrock.

Water Quality

Because of the limestone formations, Cherry Creek has higher pH, alkalinity, and total dissolved solids than is found in most area streams, which are generally acidic and have a low mineral content. While different, water quality throughout the Cherry Creek watershed is generally excellent (Brodhead Watershed Association 2008).

To ensure that water quality remains high, nine monitoring sites on Cherry Creek are tested each month as part of the Cherry Creek Streamwatch Program (Brodhead Watershed Association, Cherry Creek Watershed Sub-Association: Streamwatch Program). Tests completed each month include: air and water temperature, pH, water level, water color and clarity, current weather, odor, sulfates, nitrates, phosphates, total dissolved oxygen, specific conductivity, and alkalinity. The program reports unusual results and repeats the test(s) to verify test results. Measurements beyond safe parameters are reported to the Pennsylvania Department of Environmental Protection for follow-up and action.

While water quality scoring for repeat sites through 2003 has displayed an upward trend, strong growth pressures in the region and urban-sprawl patterns could have negative effects on both the quality and quantity of the watershed's surface and groundwater. Rooftops, parking lots, and streets are slowly replacing forests and fields. Rain and snowmelt run rapidly off these artificial surfaces instead of soaking into the ground. This storm water runoff can carry sediment and pollutants into streams, accelerate steam-bank erosion, and raise stream temperatures (BLOSS Associates 2004).

2.3 Biological Environment

The Study Area includes all of Cherry Valley, adjacent sections of the Kittatinny Ridge, and sections of the Delaware River, Brodhead Creek, McMichael Creek, Buckwha Creek, and Aquashicola Creek watersheds (Figure 2-3). Biological information already assembled by The Nature Conservancy, the Pennsylvania Natural Heritage Program, and the Service identified over 90 species and natural communities of concern in Cherry Valley and surrounding areas, including:

- 3 federally-listed, endangered species (1 historic)
- 2 federally-listed, threatened species (1 historic)
- 20 state-listed, endangered species
- 13 state-listed threatened species
- 5 state-listed, rare species
- 2 state-listed, at-risk species
- 1 critically endangered ecosystem
- 1 nationally-listed, endangered ecosystem
- 1 nationally-listed, threatened ecosystem
- 3 state-identified, special concern natural communities
- 3 U.S. Fish and Wildlife Service aquatic species of special concern
- 24 U.S. Fish and Wildlife Service nongame species of management concern
- 8 North America Wetland Conservation Act priority waterfowl species
- 15 U.S. Fish and Wildlife Service bird species of regional concern

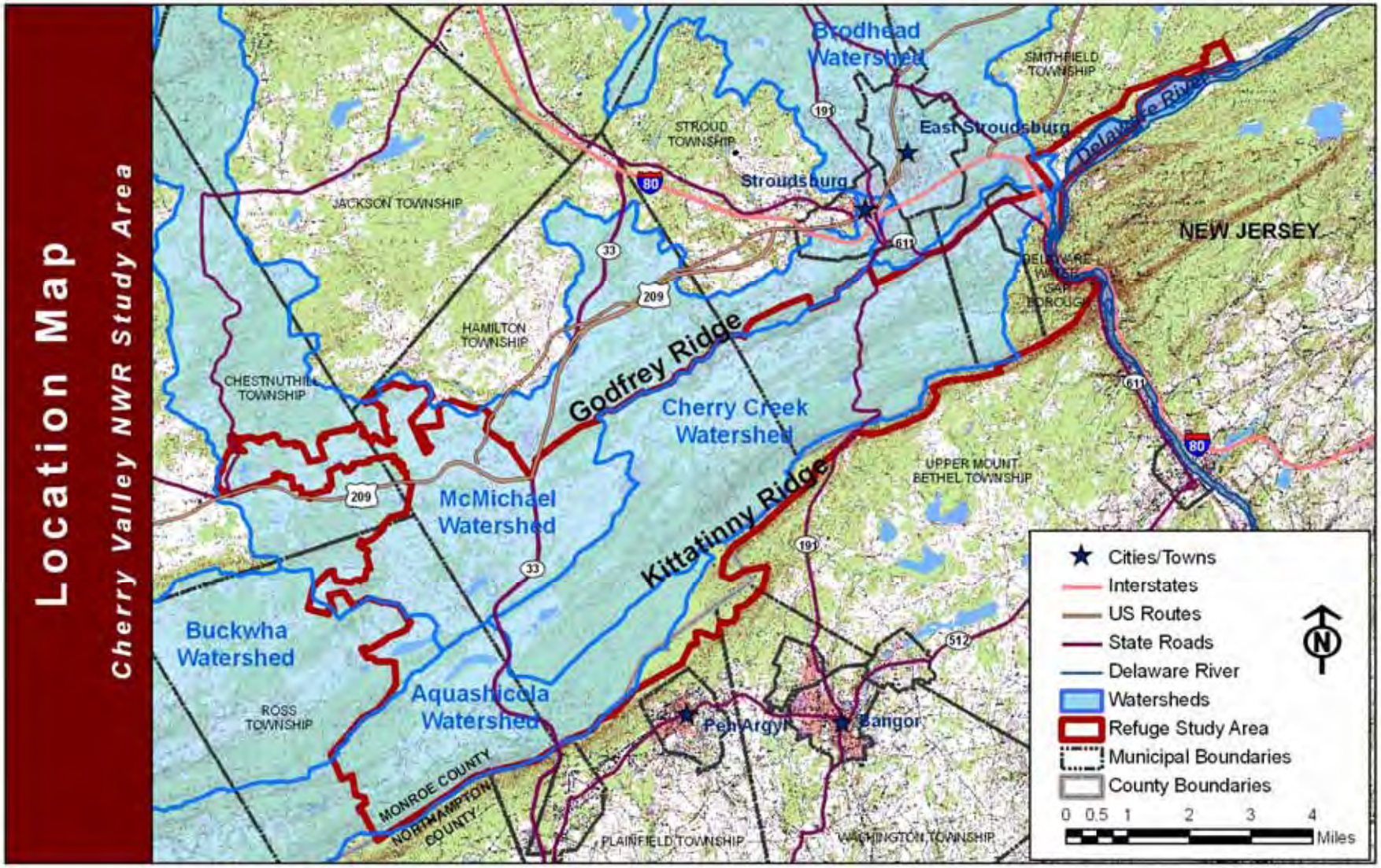


Figure 2-3. Watersheds within the Cherry Valley National Wildlife Refuge Study Area, Pennsylvania.

2.3.1 Habitats

Bounded on the north by Godfrey's Ridge and to the south by the Kittatinny Ridge, Cherry Valley's geologic history of uplift and folding of the earth's crust, combined with more recent periods of glaciation and present-day hydrologic forces, have created a diversity of habitats worth highlighting because of the distinctive plants and animals they support and contain.

Forested Ridges

In Cherry Valley, ridges and hills are cloaked in mixed hardwood and conifer forest, while chestnut oak, gray birch, quaking aspen, white pine, and pitch pine populate flat ridge tops once cleared for pasture and logging. Some juniper and Virginia pine can be found on recently abandoned farmland. Oaks, red maple, black cherry, hemlock and tulip poplar dominate in other areas. These upland forests are the most common habitat type and total nearly 18,800 acres, nearly 60 percent, of the Study Area. The forest has been logged at least once, and at least some of the area was cleared for pasture until recently.

The forest on the Kittatinny Ridge, most famous as a destination for migrating birds of prey, also provides an ideal migration corridor for songbirds, waterfowl, and bats. It has been designated an Important Bird Area by the Pennsylvania Audubon Society (Audubon 2006). The forests provide roosting and foraging habitat for many species of bat in the summer. The federally-listed Indiana bat has been documented nearby in the summer, and likely uses the Study Area for summer roosting and foraging as well.

In addition to its designation as an Important Bird Area, the National Audubon Society has referred to the Kittatinny Ridge as the premier raptor and songbird migration corridor in the northeastern U.S., and one of the leading migratory raptor and songbird sites in the world, with more than 140 bird species regularly recorded during fall migration. Every raptor species known to migrate along the Kittatinny Ridge has been seen in Cherry Valley. The extensive and relatively unfragmented forests along the ridge also provide habitat for resident animal species including large mammals such as white-tailed deer, black bear, coyote, and numerous smaller mammals including the Pennsylvania-threatened (and globally rare) Allegheny woodrat. Game birds can also be found in these forest habitats including ruffed-grouse in early successional forest, woodcock in mesic and wet forest areas, and wild turkey in many habitats.

The Kittatinny Ridge also supports cliffs and associated rocky talus slopes that provide habitat for black vultures, turkey vultures, and common ravens. Though totaling a relatively small ten acres or so, the cliffs also support several reptile species such as the five-lined skink, fence lizard, timber rattlesnakes, and other snake species.

Rivers, Streams, and Wetlands

While Cherry Creek carves out Cherry Valley, the Delaware River and numerous creeks and streams shape portions of the surrounding landscape. In most areas, riparian vegetation is well-established and stable, providing a thick canopy important to fish, especially trout populations, including native brook trout in upper reaches of Cherry Creek. Some creeks and streams are more vulnerable to point- and non-point source pollution, depending on their proximity to development.

In addition to streams and creeks, a variety of forested and open wetlands are found in the valley bottom and total nearly 1,750 acres, approximately 5.7 percent of the Study Area. These wetlands host a variety of wildlife including waterfowl, wading birds, river otter, beaver, and several dozen species of reptiles and amphibians.

Cherry Valley Wetland

Vernal pools represent another distinctive type of wetland found in Cherry Valley. While there is no system designation to cover these ephemeral pools, they are scattered across Cherry Valley. Only one site, near Hamilton Square, contains a cluster of pools. Referred to as herbaceous vernal ponds by Fike (1999), those located in the Study Area may be unvegetated or contain shrubs. The rare northeastern bulrush, a federally-listed, endangered plant, is often found in ponds receiving at least partial sunlight, and has been documented at one location within the Study Area. Approximately 33 species of salamanders, frogs, turtles, and snakes have been documented at vernal pool habitats at the Minsi Lake area located just over the Kittatinny Ridge from Cherry Valley and just outside of the Study Area.

In addition to vernal pools, Cherry Valley's limestone-enriched groundwater and unique surface geology combine to create rare calcareous fens. Several significant wildlife habitats found in Cherry Valley, especially these wetlands, have disappeared from other localities in their range. Although relatively small (an estimated 15 acres), these habitats support several globally rare species including bog turtles, yellow sedge, and thin-leaved cotton grass.

Caves

Pennsylvania has more than 1,600 caves that could serve as habitat for a variety of animal species (B. Herr, personal communication, 25 September 2008). Unfortunately, caves are ecologically fragile and sensitive to increasing threats posed by a number of factors including people interested in the sport of caving (Ganter 2001).

Cherry Valley contains one significant cave, known as Hartman's Cave. It has been listed as a special concern bat hibernaculum by the Pennsylvania Game Commission because at least five species of bat are using or have used the cave for hibernating (WPC 2008).

The federally-listed Indiana bat once hibernated there, but has not been documented there since 1950. However, temperatures in the cave are within the range used by Indiana bats during hibernation and it could be recolonized in the future (Hart 2003). The cave was gated by The Nature Conservancy in 2006, increasing the probability for Indiana bat recolonization. Similar measures taken at other locations have resulted in recolonization in other parts of Monroe and Northampton counties. The importance of Hartman's Cave as a hibernaculum for bats is notable in part because it is one of the few natural sites for hibernating bat populations in Monroe County.

2.3.2 Ecological Systems

In 2008, the Pennsylvania Natural Heritage Program identified and mapped 13 ecological system types (Table 2-2) totaling 20,548 acres within the Study Area (WPC 2008). The ecological systems cover about 70 percent of the Study Area and are located within a mosaic of forest, wetlands, agriculture (active and abandoned fields), quarries, villages, and housing developments (Figure 2-4).

Table 2-2. Ecological Systems in the Cherry Valley National Wildlife Refuge Study Area, Pennsylvania.

Ecological System	Description
Laurentian-Acadian Freshwater Marsh	This system has been mapped in valley basins throughout the Study Area, and along stream corridors where vegetation is predominantly a mix of emergent grasses, sedges, robust emergent species like cattails, and some shrubs and trees. Soils are either mucky peat or mineral and designated as circumneutral or acidic. Birds like herons, rails, waterfowl, and red-winged blackbirds and other passerines are likely to use these wetlands. Frogs, salamanders, and turtles, such as bog and spotted turtles, are possibly found in these systems. Insects are abundant and attract swallows and other insectivorous birds during the day, and bats at night.
Laurentian-Acadian Wet Meadow-Shrub Swamp	Similar to the Laurentian-Acadian Freshwater Marsh, this system has a more prominent collection of shrubs and trees.
North-Central Appalachian Acidic Swamp	Located in valley bottoms and low slopes underlain by acidic sandstone and shale or glacial materials derived from acidic bedrock, this wetland system is primarily forested with red maple, hemlock, and other species but may include areas dominated by shrubs or graminoid species, or both. The wetlands may be on peat. This habitat is used by many birds, reptiles, amphibians, and mammals.
North-Central Interior and Appalachian Rich Swamp	Found on low slopes and basins of Cherry Valley and Minsi Lake in Northampton County, this system is underlain by limey till or limestone. Species diversity is high, including numerous plant species, and may include rare species. Dominant species

Ecological System	Description
	at Bear Swamp include red maple, eastern hemlock, swamp white oak, and yellow birch in the overstory; spicebush, highbush blueberry, and great rhododendron in the shrub layer; and a variety of herbaceous species (The Nature Conservancy 2005). Green Ridge Marsh along McMichael Creek is actually a mix of forested wetland, graminoid marsh, and scrub-shrub wetland (The Nature Conservancy 1999). Hemlock parsley, a state-listed, endangered plant, is found in this type of wetland. Birds such as Canada warbler and common yellowthroat, mammals including black bear and deer, and a variety of reptiles and amphibians may be found. These systems are rare in northeastern Pennsylvania and may be used by bog and spotted turtles. These forested wetlands shelter the creeks that flow through them, making the creeks more suitable for trout.
North-Central Appalachian Seepage Fen	This system represents the rarest (G1G2) community type in the study. Fike (1999) calls this the Poison Sumac-Red Cedar-Bayberry Fen. These systems are underlain by limey till or limestone. Species diversity is high with numerous plant species, including some rare species like yellow sedge and thin-leaved cotton grass. Birds, mammals, amphibians, and bog turtles (state- and federally-listed), and possibly spotted turtles, (as well as other reptiles) may be found using these extremely rare systems.
North-Central Interior Wet Flatwoods	The system is found on outwash and glacial lake deposits along Cherry Creek. It was observed at a couple of locations but may occur throughout the lower part of the stream corridor where the valley is broadest. Swamp white oak and pin oaks are characteristic, but red maple and other tree species are possible. It is likely that birds like wood ducks and herons, reptiles, amphibians, and mammals use these systems.
Central Appalachian River Floodplain	Closer to the Delaware River and some of its larger tributaries, such as the lower Brodhead and McMichael creeks, this system is dominated by silver maple and sycamore. Young sycamores, river birch, grasses, and forbs are common in frequently scoured areas. Soils are alluvial and range from silty to cobble and gravel. Regular flooding makes these systems vulnerable to invasion by exotic species. Birds use these systems both for nesting and as migration corridors. Mammals such as mink use these riparian systems. State-listed, endangered sand cherry is sometimes associated with the cobble-gravel grassland communities in this system.

Ecological System	Description
Central Appalachian Stream and Riparian	Located near smaller streams, the system and its associated vegetation were not easily separable while mapping. Both upland and wetland associations may be included. Birds, including herons and songbirds like the Louisiana waterthrush, use these areas. Mid-size mammals such as mink, river otter, and beaver are found in these systems, as well as bats. The streams are habitat and dispersal corridors for wood turtles. Vegetation shading streams is important to maintaining cool water temperatures and reducing the amount of sediments reaching the watercourse.
North-Central Interior and Appalachian Acidic Peatland	Up on the ridges, this highbush blueberry and sphagnum-dominated system is scattered with red maple and conifers (pitch pine, hemlock, white pine), and underlain by sandstone and acidic till. Soils are shallow peat in the Cherry Creek area. Rare plants such as swamp dog hobble are possible in these wetlands. Birds like swamp sparrows, some warblers and other passerines may use these areas. It is possible that golden-winged warblers, and mammals such as shrews, voles and larger mammals, use the system. Bats are attracted by the abundance of insects. Raptors and timber rattlesnakes are attracted by the presence of small prey. Frogs and salamanders are likely as well.
Northeastern Interior Dry-Mesic Oak Forest	Tulip poplar, northern red oak, red maple, sugar maple, white ash, some hemlock and white pine, with various amounts of white oak, black birch, basswood, black cherry and other hardwoods, dominate this system. It forms the matrix forest of the toe slopes of the ridges and high valleys. Shrub cover may be sparse to abundant. Birds such as scarlet tanager and a variety of warblers use this forest system for nesting and migration. Mammals such as black bear and deer use this system. This system also serves as the matrix forest for the Minsi Lake Vernal Ponds (located just outside of the Study Area) and a cluster of ponds near Hamilton Square. As such, it is an important buffer for the ponds and the salamanders and other species that use the ponds.
Central Appalachian Pine-Oak Rocky Woodland	In open woodland, this system is typically dominated by chestnut oak, hickories, and pitch pine with shrubs such as scrub oak, lowbush blueberries and black huckleberry, and herbaceous species such as Pennsylvania sedge and little bluestem grass, along with lichens. These areas are more likely to have timber rattlesnakes and Allegheny woodrats because of availability of forage and cover. Rattlesnakes may bask or

Ecological System	Description
	hibernate if there are sufficiently deep caves or crevices located in the system. Some birds (e.g., turkey vultures) use these areas for nesting or sunning. Golden-winged warblers may use these areas.
Central Appalachian Dry Oak-Pine Forest	This globally-rare (G3) system represents the matrix forest of the Kittatinny Ridge and includes the Dry Oak-Heath Forest and Dry Oak-Mixed Hardwood Forest dominated by chestnut oak and other dry oaks, hickories, sassafras, gray birch and aspen, along with blueberry, huckleberry, and mountain laurel (Fike 1999). Hemlock, white pine and pitch pine are rare to common. Ravines are dominated by hemlock and were initially called Appalachian (Hemlock)-Northern Hardwood Forest. However, the co-dominants in these areas are chestnut oak and black birch. Variable sedge occurs in this forest type in the Study Area. Forests on the low ridges and valley slopes north of Kittatinny Ridge are hemlock-dominated in many areas or mixed hardwoods and hemlock-dominated. White pines are scattered throughout while quaking aspen is common on the flat ridgetops in some areas, possibly indicating past clearing for pasture. Some juniper and Virginia pine were found on abandoned farm land. Oaks, red maple, black cherry, and tulip poplar may dominate in some areas. Timber rattlesnakes and copperheads use the forests on Kittatinny Ridge. Deer, bear, and other mammals are common.
Appalachian (Hemlock)-Northern Hardwood Forest	Eastern hemlock, red and sugar maples are dominant where the forest is mixed, while sugar and red maples and tulip poplar along with varying amounts of northern red oak, black and yellow birch, and white ash are dominant where the forest is all hardwoods. Great rhododendron may be an important shrub species in areas of greater moisture and cooler temperatures. This system is also important to nesting and migrating birds such as parula and black-throated green warblers. It is a minor component of the Study Area, apparently relegated to east- or north- facing valleys underlain by limestone, limey shales or limey till. Black bear, white-tailed deer and a variety of small mammals and birds utilize this forest type.

Source: Pennsylvania Natural Heritage Program 2008

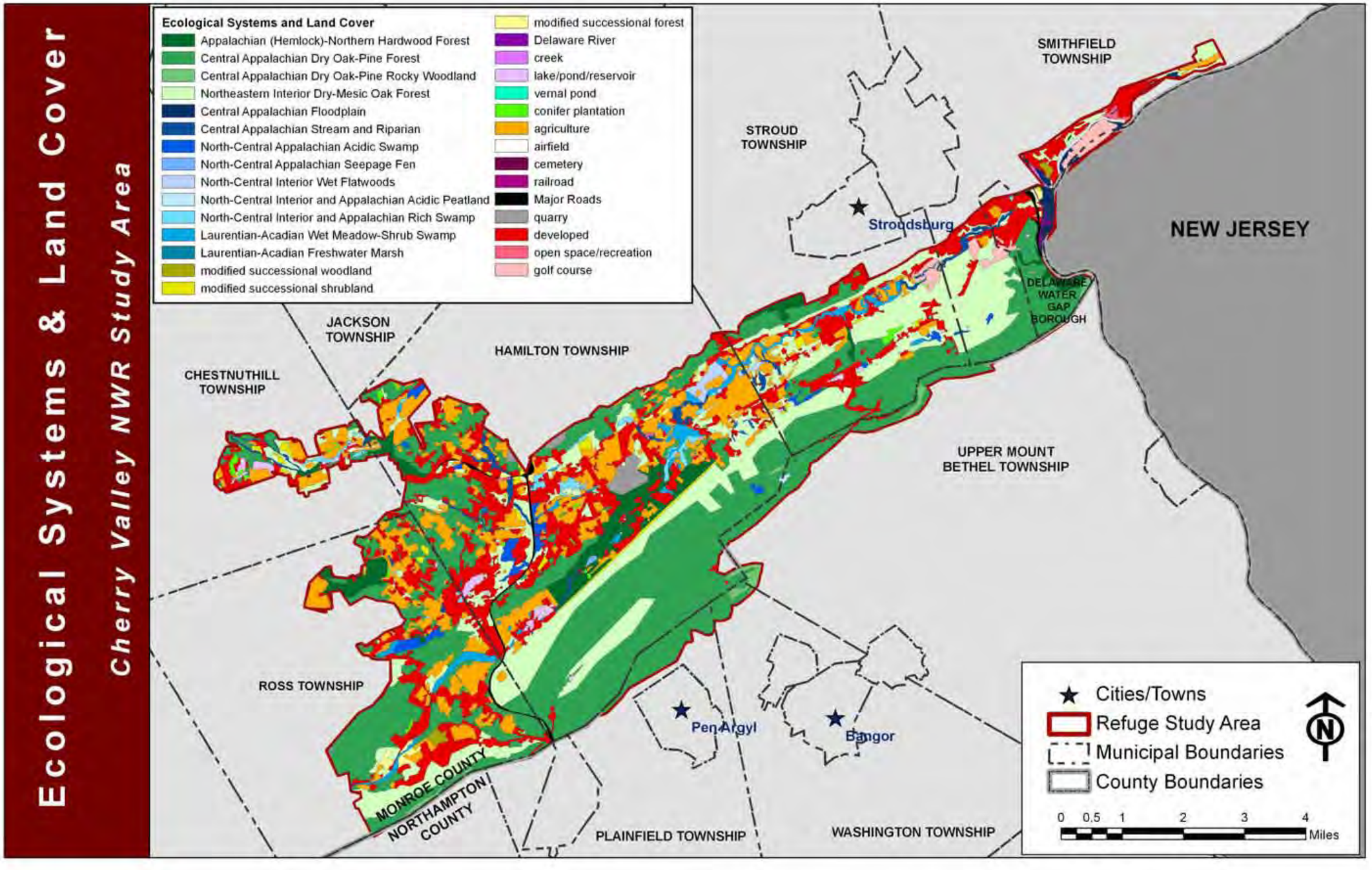


Figure 2-4. Ecological Systems in the Cherry Valley National Wildlife Refuge Study Area, Pennsylvania.

2.3.3 Plants and Animals

The Study Area provides habitat for a wide range of species (see Appendix C for select species lists). At least 40 species of national, regional, or state concern either live within, near, or migrate through the area during their life cycle (Table 2-3). Five species federally-listed as endangered or threatened under the ESA have been documented within or near Cherry Valley. The federally-listed, threatened bog turtle and northeastern bulrush have been documented in the Study Area. The federally-listed, endangered dwarf wedgemussel is nearby in the Delaware River. Historically, the federally-listed, endangered Indiana bat was documented in the Study Area and efforts are underway to re-establish favorable conditions for this species. The federally-listed, threatened small-whorled pogonia was also historically documented in Monroe County, likely near Delaware Water Gap (S. Klugman, personal communication, 2 September 2008). Bald eagles, federally protected but recently delisted under the ESA, are frequent visitors and are nesting in the valley. In addition, the Service has recognized six migratory bird species within the Study Area as birds of conservation concern: wood thrush, prairie warbler, cerulean warbler, worm-eating warbler, Louisiana waterthrush, and peregrine falcon (USFWS 2002b; also see Appendix C, Table C-2).

Table 2-3. Federal and state species identified as at-risk, rare, threatened, or endangered species within or near the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania (-- = not listed under the federal ESA[1]).

	Common Name	**Species Name**	**State Conservation Status**	**Federal ESA Status**
Animals	Dwarf wedgemussel	*Alasmidonta heterodon*	Endangered	Endangered
	Indiana bat[2]	*Myotis sodalist*	Endangered	Endangered
	Bog turtle	*Glyptemis muhlenbergi*	Endangered	Threatened
	Allegheny woodrat	*Neotoma magister*	Threatened	--
	Bald eagle	*Haliaeetus leucophalus*	Threatened	--
	Bridle Shiner	*Notropis bifrenatus*	Endangered	--
	Eastern small-footed bat	*Myotis lebeii*	Threatened	--
	Eastern pearlshell[3]	*Margaritifera margaritifera*	Endangered	--
	Green-winged teal	*Anas crecca*	Rare	--
	Ironcolor shiner	*Notropis chalybaeus*	Endangered	--
	Osprey	*Pandion haliaetus*	Threatened	--
	Peregrine falcon	*Falco peregrinus*	Threatened	--
	Northern harrier	*Circus cyaneus*	At-Risk	--
	Northern long-eared bat	*Myotis sepentrionalis*	At-Risk	--
	Timber rattlesnake	*Crotalus horridus*	Rare	--
	Wilson's snipe	*Gallinago delicata*	Rare	--
Plants	Bebb's sedge	*Carex bebbii*	Endangered	--

	Common Name	Species Name	State Conservation Status	Federal ESA Status
Plants (cont.)	Brook lobelia	*Lobelia kalmii*	Endangered	--
	Carolina grass-of-Parnassus	*Panassia glauca*	Endangered	--
	Downy willow-herb	*Epilobeum strictum*	Endangered	--
	Hemlock-parsley	*Conioselinium chinense*	Endangered	--
	Northeastern bulrush	*Scirpus ancistrochaetus*	Endangered	Endangered
	Northern water plantain	*Alisma trivale*	Endangered	--
	Sand cherry	*Prunus pumila v. depressa*	Endangered	--
	Small floating manna grass	*Glycera borealis*	Endangered	--
	Small-whorled pogonia[4]	*Isotria medeoloides*	Endangered	Threatened
	Sojak Smith's bulrush	*Schoenplectus smithii*	Endangered	--
	Spreading globeflower	*Trollius laxus*	Endangered	--
	Variable sedge	*Carex polymorpha*	Endangered	--
	Wild bleeding hearts	*Dicentra exima*	Endangered	--
	A sedge	*Carex tetanica*	Threatened	--
	American holly	*Ilex opaca*	Threatened	--
	Hoary willow	*Salix candida*	Threatened	--
	Lesser bladderwort	*Utricularia minor*	Threatened	--
	Matter spike-rush	*Eleocharis intermedia*	Threatened	--
	Susquehanna sand cherry	*P. pumila v. susquehannae*	Threatened	--
	Thin-leaved cotton grass	*Eriophorum viridicarinatum*	Threatened	--
	Yellow sedge	*Carex flava*	Threatened	--
	Capitate spike-rush	*Eleocharis olivacea*	Rare	--
	White water crow-foot	*Ranunculus aquitilis*	Rare	--

[1] ESA = Federal Endangered Species Act of 1976 (as amended)
[2] Hibernating bats last documented in Cherry Valley in 1950, but likely summer inhabitant.
[3] Previously documented in Cherry Creek but habitat at known population location has since been destroyed. Currently there are no known populations in Cherry Creek.
[4] Historic occurrence in Monroe County, habitat present but species not recently documented in area.
source: Pennsylvania Natural Heritage Program 2008

Animals

Mammals

The most well-known mammal species in Cherry Valley are game animals, including black bear and white-tailed deer. Squirrel, raccoon, woodchuck, skunk, and opossum are found in the more developed areas of the watershed. Common furbearers include mink, muskrat, beaver, and otter, all of which are associated with, and depend upon,

clean water (BLOSS Associates 2004). Over 25 species of mammals are thought to occur in or near the Study Area (see Appendix C, Table C-1 for a species list of mammals).

Cherry Valley is also designated as an Important Mammal Area (Important Mammal Areas Project Website 2008) because of Hartman's Cave and the four bat species currently using the cave. Approximately 350 hibernating bats were counted during a quick survey in April 2001. It is likely that additional bats hibernate in portions of the cave that are not accessible to humans. Hartman's Cave is also significant due to its potential for sheltering Indiana bats in the future. The Indiana bat was last found in the cave in 1950 (Hart 2003).

Birds

Cherry Valley's diverse habitats support an array of breeding and migratory birds (see Appendix C, Table C-2 for species list of birds). Distinctive bird habitats include wetlands, riparian forest, agricultural fields and meadows, upland forest, ridge top shrublands, and rocky outcrops.

The Kittatinny Ridge is world renowned for its use by fall-migrating, diurnal raptors. Every species of diurnal raptor found in the northeastern United States and Canada, including northern goshawk, golden eagle, peregrine falcon and northern harrier, has been recorded along the Kittatinny Ridge. Reports of bald eagle and osprey are becoming much more frequent along the ridge top and Cherry Creek. Owls and nightjars are found throughout the watershed. The most common of the nocturnal raptors is the barred owl, which is associated with swamps and bottomland forests. The great-horned owl and screech owl can be found in the dryer forests and in some more developed areas. There is some evidence that the smallest of nocturnal raptors, the northern saw-whet owl, uses the valleys of the Cherry Creek watershed as migration corridors (BLOSS Associates 2004).

Wetlands in Cherry Valley regularly host at least seven species of shorebirds during spring migration including: greater yellowlegs; lesser yellowlegs; spotted, solitary, and least sandpipers; short-billed dowitcher; and Wilson's snipe. Migrating waterfowl commonly include green-winged teal, hooded merganser, and black duck, while mallards and wood duck nest in wetlands throughout the valley. Great egrets are regular visitors during the fall migration. Great blue herons also are frequently seen in wetlands and streams throughout the valley, and green herons and least bitterns are known to visit as well. Bald eagles and osprey are often seen foraging and roosting where Cherry Creek flows through emergent wetlands, and are known to nest nearby.

Cherry Valley's long agricultural tradition has created a mosaic of fields and pastures that support grassland birds including bobolink (commonly seen in the Bossardsville area), and (more sporadically) eastern meadowlark and grasshopper sparrow. Open fields also favor winter foraging habitat for several raptors most commonly including northern harriers, American kestrels, and rough-legged hawks.

Cherry Valley's forests contain its most extensive bird habitat and host many resident and neotropical species of conservation concern. Bottomland riparian forests host Acadian flycatchers, black-throated green warblers, golden-crowned kinglet, ovenbird and wood thrush. Drier slopes and ridge tops favor nesting sites for scarlet tanager (20 percent of the world's population nests in Pennsylvania) and worm-eating and cerulean warblers. Surveys conducted by the Pocono Avian Research Center (2004) indicate that the cerulean warbler, a species showing severe population declines across much of its historic breeding range, is doing well on the Kittatinny Ridge.

Game birds can be found throughout the watershed. Mourning dove, ruffed grouse, ring-necked pheasant, and wild turkey call the valley's fields, forests, and hedgerows home. American woodcock commonly display during their annual courtship ritual in the valley's scrub/shrub lands while adjacent woodlands provide cover for nesting (WPC 2008).

The heavily forested nature of the watershed also makes it prime habitat for rarer species such as red-headed woodpecker, pileated woodpecker, and the yellow-bellied sapsucker (BLOSS Associates 2004). Depending on conditions, several species of northern finches including evening grosbeak, pine siskin, common redpolls and crossbills can be found throughout the watershed during winter.

Reptiles and Amphibians

Spotted turtles, wood turtles, four-toed salamanders and marbled salamanders, all thought to be declining, can be found within the valley's wetlands and vernal pools. While outside of the Study Area, the nearby Minsi Lake Corridor, located just to the south in Northampton County, is particularly known for its vernal pools and associated rare species of plants and animals. Timber rattlesnakes occur within rock outcrops and boulders of the Kittatinny Ridge's dry oak forests and woodlands. This species is considered vulnerable to collection and habitat destruction by the Pennsylvania Fish and Boat Commission (WPC 2008).

Federally-listed, threatened bog turtles represent the rarest vertebrate species in the Study Area (WPC 2008). Bog turtle experts suspect that Cherry Valley may be one of the most important sites throughout the species' range from Maryland to Massachusetts (C. Copeyon, U.S. Fish and Wildlife Service, Pennsylvania Field Office, pers. comm.). This is most likely because of the interconnectedness of creeks, fens, seeps, and other wetlands located within Cherry Valley. Bog turtles also require the type of open, mucky wetlands and clean water that occur throughout the Study Area. In 2001, the Service published the Bog Turtle Northern Population Recovery Plan (USFWS 2001) to manage and maintain bog turtle habitat to ensure its suitability for bog turtles. Soon after, The Nature Conservancy published guidelines and recommendations on the identification, management, and maintenance of bog turtle habitat at selected sites in Cherry Valley and surrounding areas (Perles and Podniesinki 2004). The Nature Conservancy is

currently working to maintain and restore bog turtle habitat at roughly half of those sites.

Fish and Mussels

Brown trout occur along the entirety of Cherry Creek, while native brook trout are limited to the upper reaches and tributaries. Since brook trout are generally intolerant of environmental perturbations, their occurrence indicates good stream quality (Hudy et al. 2005). However, brook trout numbers decline rapidly in mid-sections of Cherry Creek, most likely due to a decline in habitat quality, warmer water temperatures (BLOSS Associates 2004), and competition with non-native wild brown trout. The primary food source of trout is aquatic macroinvertebrates, many of which are also sensitive to water quality factors such as pollution and sedimentation.

Brook trout

There are two state-listed, endangered fishes that have been historically documented in the Study Area, the bridle shiner and the ironcolor shiner (Table 2-3 and Appendix C, Table C-3). The bridle shiner is typically found in small, warm-water creeks and ponds to large lakes and rivers. It is generally found with moderate to abundant submerged vegetation (Pennsylvania Natural Heritage Program 2007).

Maintaining free flowing streams will also benefit American eel, a federal species of concern that is found in the Cherry Creek watershed. American eels are catadromous. In other words, they breed in the ocean and grow and mature in freshwater. American eel adults breed in the Sargasso Sea. Larvae drift to coastal estuaries, where they metamorphose to juvenile fish before swimming upstream to freshwater. Eels remain in freshwater for eight or more years before returning to the sea.

In addition to trout and American eel, over 40 fish species have been identified within the Study Area (see Appendix C, Table C-3 for a list of fish species). A September 2000 study documented 15 species in Cherry Creek including: brown trout, rainbow trout, brook trout, white sucker, American eel, blacknose dace, common shiner, cutlip minnow, tessellated darter, fallfish, pumpkinseed, rock bass, redfin pickerel, slimy sculpin, and longnose dace (Hartzler 2001). Preliminary data from a subsequent survey in September 2008 found all but three of these species (rock bass, pumpkinseed sunfish, and slimy sculpin) and identified several additional species: largemouth bass, shield darter, sea lamprey, and creek chub (D. Fischer, personal communication, 5 September 2008).

Three mussel species recently have been identified in Cherry Creek (R. Anderson, pers. comm., 5 August 2008). The relatively common eastern elliptio and creeper mussels appear to have stable populations (R. Anderson, pers. comm., 5 August 2008), while the triangle floater has been classified as vulnerable by the Pennsylvania Natural Heritage Program. The federally-listed, endangered dwarf wedgemussel is found in the Delaware River, upstream from the mouth of Cherry Creek. The Eastern pearlshell mussel, a state-listed, endangered species, once occupied habitat in the Cherry Creek watershed. However, recent surveys revealed that the aquatic habitat at its former known location no longer exists and no mussels were located. Since the Eastern pearlshell prefers unpolluted, small streams to medium-sized rivers, the Cherry Creek watershed could be targeted for reintroduction in the future.

Plants

The limestone rock underlying Cherry Valley provides more basic conditions (higher pH, i.e., calcareous) in waters and soils that create conditions that support a diversity of special plants and natural communities unable to tolerate the more acidic (lower pH) conditions found on adjacent bedrock types. The restriction of many of these plants to calcareous wetlands accounts for their rarity (BLOSS Associates 2004).

According to The Pennsylvania Natural Heritage Program (WPC 2008), at least ten globally rare plant species exist in Cherry Valley, including habitat for the federally-listed, threatened small-whorled pogonia (an orchid), and spreading globeflower, a small aquatic buttercup that prefers wetlands in limestone valleys. Most of the rare plants can be found in the base-rich waters of fens and other wetlands, or in open water creeks and ponds. Other fen species include brook lobelia, yellow sedge, thin-leaved cotton grass, state-listed, endangered grass-of-parnassus, and downy willow herb. Swamps and hillside seeps may harbor spreading globe flower and hemlock parsley.

Of the plant species found in the Study Area, floating manna grass and the globally-rare and federally-listed, endangered northeastern bulrush are often found together in partially shaded vernal ponds, while the water plantain and yellow water crowfoot may be found in shallow, muddy ponds. The more acidic wetlands contain hoary willow, swamp dog hobble, and matted spikerush. In the uplands, the variable sedge is probably the rarest plant, preferring acidic sites that are mesic to dry and often disturbed by fire. It can be found on the Kittatinny Ridge along with American holly, bleeding hearts, and the “Susquehanna” sand cherry variety (WPC 2008).

2.4 Land Use and Management Status

Distinct landforms, breathtaking vistas, unique habitats, and species of special concern make Cherry Valley an area of unique value. Understanding land use and ownership is important for assessing the impact of conservation actions including establishing a refuge. Within the Study Area, a majority of lands are considered to be in “open” (not developed) land uses and most parcels are in private ownership. Nevertheless, land uses and ownership are quite diverse across the Study Area.

2.4.1 Local Government Structure and Zoning

The Study Area straddles parts of six townships in southeastern Monroe County and a narrow strip of land in Northampton County. No single municipality falls completely within the Study Area. A variety of land-use zoning designations exists within the Cherry Valley National Wildlife Refuge Study Area (Table 2-4).

Land use within the Study Area has been classified into ten general categories, which are based on Monroe County tax records (Table 2-5). For this analysis, these ten categories were grouped into open space parcels and developed parcels. Developed parcels, which include residential and industrial properties, collectively account for about one-third of the Study Area. Residential properties, alone, cover nearly 20 percent of the Study Area. Open space parcels, which include agriculture, parks, forest, vacant, and in this case, property owned by utilities, together account for nearly 70 percent of the Study Area.[1] Figure 2-5 shows developed and open space lands within the Study Area.

[1] Land classified for use by utilities comprises 10 percent of the total. This area is largely reflective of the land holding by Penn American Water, which owns over 3,000 acres of nearly contiguous property in the southwestern portion of the Study Area. This land remains largely undeveloped.

Table 2-4. Monroe County municipalities, area (in acres), percent of municipality within the Study Area, and zoning districts in the Cherry Valley National Wildlife Refuge Study Area, Pennsylvania.

Municipality	Total Acres	Acres Within Study Area	Percent Within Study Area	Zoning Districts Within Study Area
Chestnuthill Township	23,935.50	1,428.94	5.97%	RR - Rural Residential; R-1 - Low Density Residential; R-S - Special residential; LIC & I - Industrial; VC - Village Commercial/Residential; GC - General Commercial
Delaware Water Gap Borough	1,264.60	745.99	58.99%	S-1 Conservation
Hamilton Township	24,645.00	15,455.87	62.71%	A - Special Residential; B - Medium Density Residential; C-Commercial; C-1 – Limited Commercial; D – Industrial, E – Low Density Residential
Ross Township	14,673.50	8,005.46	54.56%	RR – Rural residential; R-1 – Low Density Residential; R-2 – Low Medium residential; VC – Village Commercial/Residential; GC – General Commercial; CR & SC – Special Conservation
Smithfield Township	14,924.50	3,384.36	22.68%	R-1 – Low Density Residential; R-2 – Medium Density Residential
Stroud Township	20,041.50	4,746.24	23.68%	O-1 – Conservation; S-1 – Recreation; C-3 - Commercial
Total	99,484.60	33,766.85*	33.94%	---------

Source: Monroe County parcel data from 2006; Lewis (2008)

* Boundary for the Study Area does not correspond to property lines. Total acres exceeds the 31,500 acres established for the Study Area because individual parcels were not divided to reflect the boundary line.

Table 2-5. Land use categories and area (in acres) in the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.

		Acreage	Percent of Total Study Area Acreage
Open Space Parcels	Agriculture	5,634	16.2
	Communication/Transportation/Utilities	3,444	9.9
	Forest	4,879	14.0
	Public/Private Parks	5,248	15.1
	Vacant	4,563	13.1
	Subtotal	23,768	68.2
Developed Parcels	Hotels/Camps	761	2.2
	Industrial	2,423	6.9
	Residential	7,012	20.1
	Retail/Services	646	1.9
	Other	259	0.7
	Subtotal	11,101	31.8
Grand Total		34,869[1]	

[1] Boundary for the Study Area does not correspond to property lines. Total acres exceeds the 31,500 acres established for the Study Area because individual parcels were not divided to reflect the boundary line.

Source: Monroe County parcel data 2007. GIS analysis by US Fish and Wildlife Service Division of Economics, August 2008.

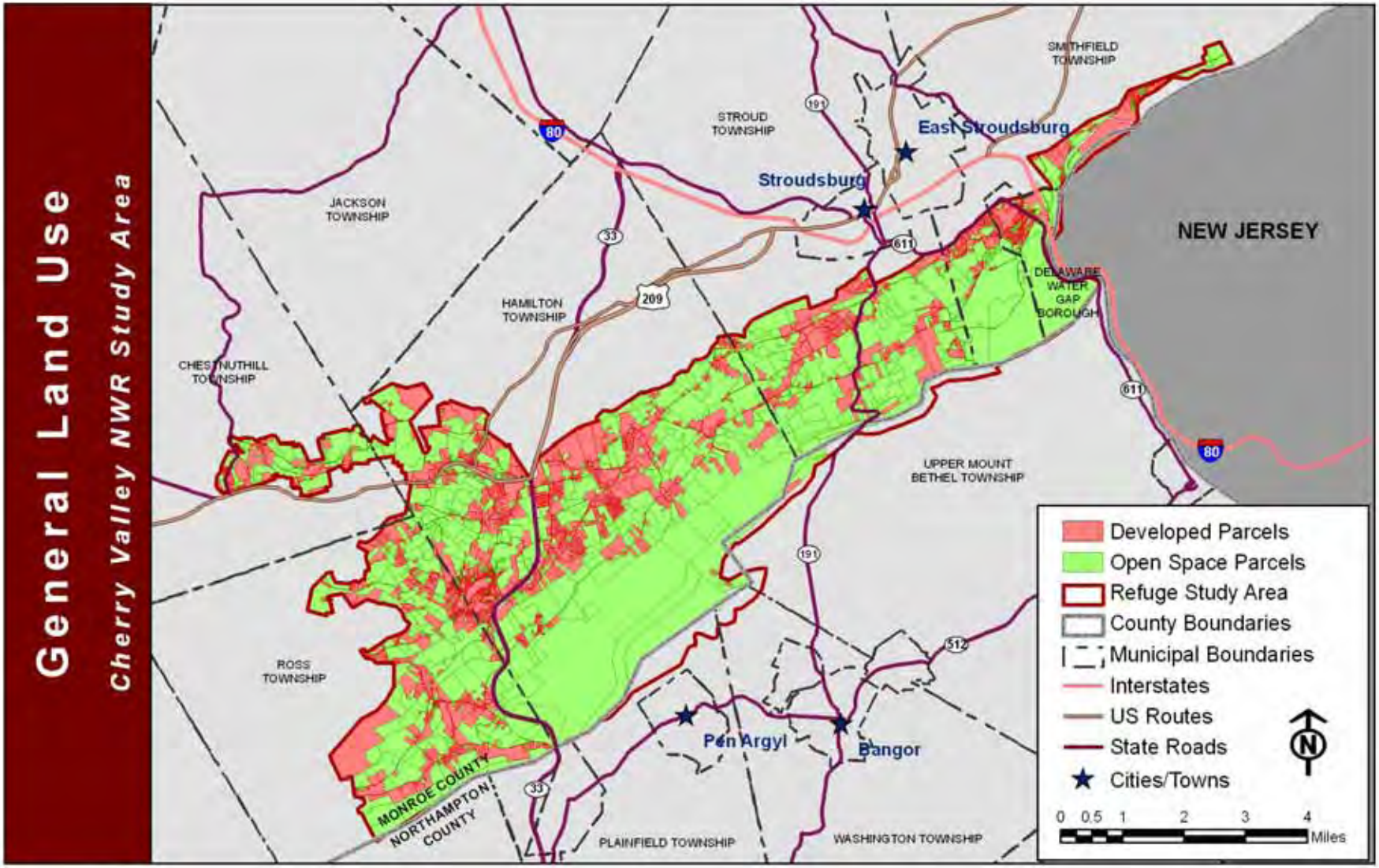


Figure 2-5. Location of developed and open space parcels in the Cherry Valley National Wildlife Refuge Study Area. Source: Monroe County Land Use data. Analysis conducted by Division of Economics, U.S. Fish and Wildlife Service, September 2008.

2.4.2 Ownership and Management

Land ownership within the Study Area is summarized by the land-use categories in Table 2-5 and the map in Figure 2-6. Additional information on land ownership by township can be found in Table 2-6 and in Appendix D (Economic Assessment).

Developed Land

Industrial Parcels

Industrial parcels are clustered in three main locations within the Study Area. Two clusters lie right on the border of the boundary line. There are 32 industrial parcels, which collectively account for 2,423 acres (or 7 percent) of the Study Area. Total assessment value of these properties is over $2.3 million.

Residential Parcels

Residential parcels occupy over 7,000 acres of the Study Area. This amounts to about 20 percent of the total area. Distribution of residential parcels is relatively uniform across the municipalities, with the exception of Delaware Water Gap Borough and Smithfield Township. Collectively, residential parcels were assessed at slightly more than $60 million back in 1988, which equates to about 60 percent of the total assessment value of all the parcels within the Study Area.[2] There are over 2,500 residential parcels. The median parcel size is slightly over one acre with a corresponding median assessment of $23,500. Based on Monroe County's current market index, this equals a median current market price of $183,470.[3]

Retail/Services

Land parcels associated with retail or service establishments are primarily located near residential areas. Hamilton and Smithfield townships have the greatest acreage in these sectors (290 and 196 acres, respectively). While the Hamilton Township parcels are numerous and contain no large parcels (the largest parcels are less than 50 acres and are associated with church groups), the majority of the acreage in Smithfield consists of a single parcel owned by the Manwalamink Water Company (174 acres). This company is affiliated with the Shawnee on Delaware Corporation. The parcel, while classified as developed, likely supports many natural resource-related characteristics.

Hotels/Camps

Hotel and camp parcels collectively comprise 761 acres within the Study Area, and have a current assessed value of over $8.7 million. Smithfield Township contains 263 acres. Shawnee on Delaware Corporation owns the majority of this property (210 acres). Other large hotel/camp property owners include 181 acres owned by Forte, Inc., at the border of the Study Area in Stroud Township, and 85 acres owned by the Saylors Lake

[2] Monroe County latest reassessment occurred in 1988.

[3] Monroe County uses a current market index multiplier of 7.81. Source: Email from George Basila, Monroe County Planning Commission to Edward Maillett , U.S. Fish and Wildlife Service, "Assessment units ?" on 9 June 2008.

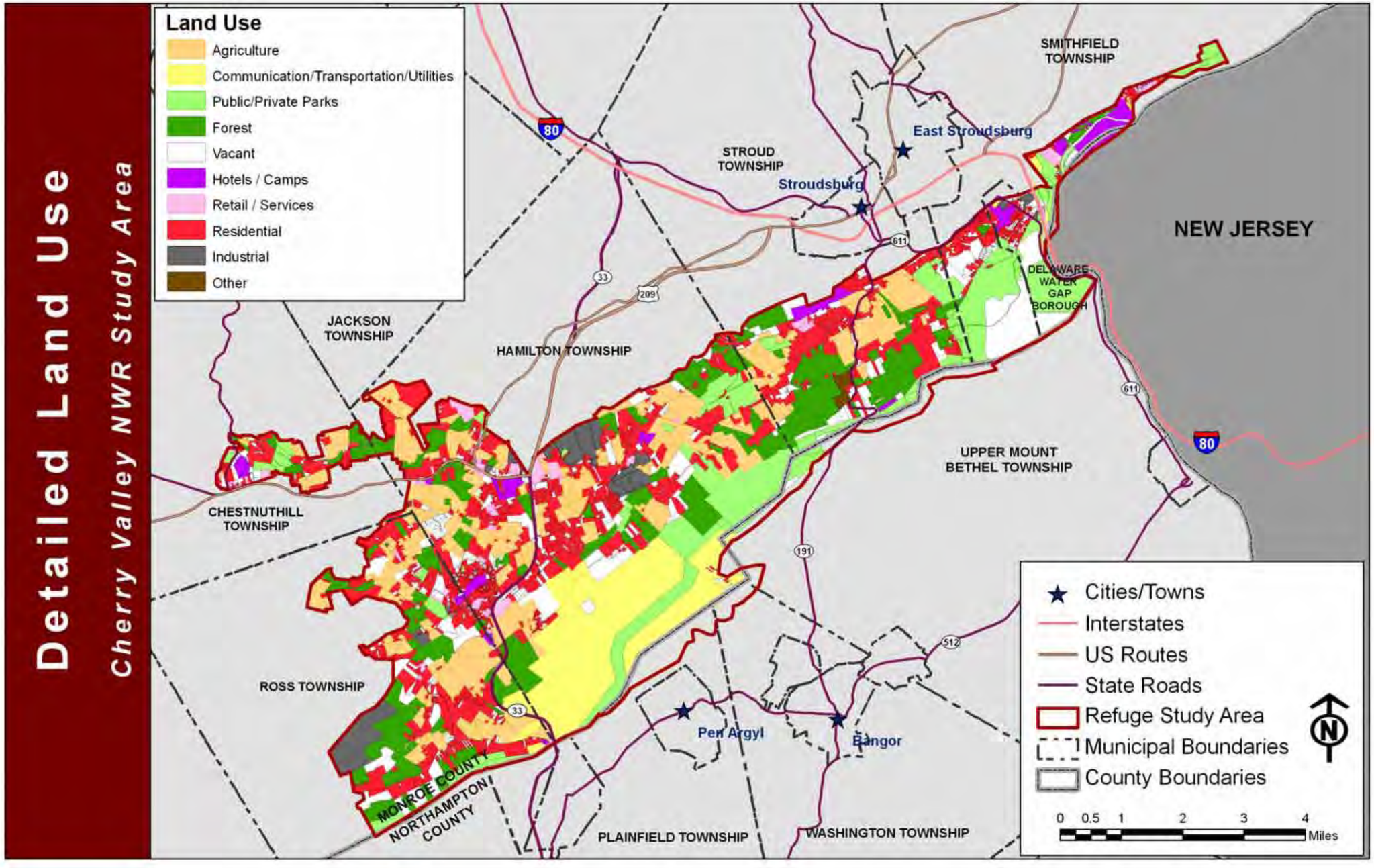


Figure 2-6. Detailed land-use in the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.

Fishing Association in Hamilton Township. Although initially classified as developed property, much open space area permeates these parcels and may support desirable habitat and species.

Other Classified Parcels

Approximately 259 acres classified as "otherwise" have development characteristics. Examples of land use in this category include scrap yards and educational and government services. These parcels account for less than one percent of the Study Area. The relatively large percent of parcels in Delaware Water Gap is comprised of property owned primarily by the Delaware River Joint Toll Bridge Commission.

Open Space

Agriculture

Agricultural lands occupy 5,634 acres within the Study Area. Collectively, this represents about 16 percent of the total acreage. These lands primarily lie along the valley floor, north of Cherry Valley Road and to the west of PA State Route 33. There are nearly 140 agricultural parcels that range in size from one acre to over 200 acres. The average agricultural parcel size is about 40 acres. The total assessment of agricultural parcels in the Study Area is about $6.1 million. Hamilton Township contains the greatest amount (2,907 acres) of agricultural acreage of all the municipalities. Over 20 percent of the Study Area within Chestnuthill Township is in agriculture. Hamilton, Ross, and Stroud townships also have high percentages of agricultural use.

Communications/Transportation/Utilities

Over 3,400 acres in the Study Area are included in this category. Collectively, these parcels represent about ten percent of the Study Area. However, one company (the Pennsylvania American Water Company) owns the majority of this land. Specifically, the company owns about 3,050 acres in Hamilton Township. This property remains largely undeveloped.

Forestry

There are 4,879 acres of land identified as forested parcels within the Study Area. The majority of the forests lie in Hamilton, Ross, and Stroud townships. The ownership of these parcels is numerous and diffuse. There are over 100 forest parcels, the majority of which are owned by individuals. Parcel sizes range from less than one acre to 150 acres. The average parcel size is 30 acres. Stroud Township has nearly 25 percent of its total Study Area acreage classified as forest.

Parklands

There are over 5,000 acres in the Study Area classified as parkland by Monroe County. This constitutes about 13 percent of the Study Area. The U.S. government owns nearly 4,000 acres of parkland parcels, most of which lie in Smithfield and Stroud townships. The Nature Conservancy is the second largest landowner of park parcels. They own about 400 acres within the Study Area. Other large landowners (i.e., greater than 100

acres) of parklands include the Commonwealth of Pennsylvania, the Pocono Heritage Land Trust, and Smithfield Township.

Vacant Lands

There are 789 parcels classified as vacant by Monroe County. Vacant parcels make up about 13 percent of the Study Area. Smithfield Township has the largest percentage within the Study Area classified as vacant. The largest parcels are located in Smithfield Township and Delaware Water Gap Borough and are owned by the Delaware Water Gap Borough. These two adjacent parcels total 660 acres (512 acres and 148 acres, respectively) and are bounded by property owned by the U.S. National Park Service.

Table 2-6 shows private and public land ownership by township within the Study Area. Note: Acreage differences between Tables 2-5 and 2-6 are due to differences in how parcels on the Study Area boundary were included or excluded from the analysis.

Tax Revenue Impacts

Monroe County and its municipalities derive the majority of their tax revenues from real estate taxes. Real estate taxes fund school districts, libraries, and county and township government services. Monroe County uses millage to compute real estate taxes. Each mill represents one dollar in taxes for every $1,000 in value. Monroe County calculates current market value of property, for tax purposes, to be four times the 1988 assessment value.[4] Actual current market value is estimated at 7.81 times the 1988 assessment value[5].

Tables 2-7 and 2-8 show the total assessed value and calculated current market value of real estate parcels located within the Study Area. The values of total estimated tax receipts between Tables 2-7 and 2-8 differs somewhat because it was necessary to use an average millage rate to calculate values in Table 2-8. Market value for all parcels is estimated to be $783 million based on a total assessment of $100.3 million. Total tax revenue on these properties is estimated at approximately $63.4 million.

[4] Current assessment values are based on Monroe County's last reassessment conducted in 1988.

[5] Actual current market value is based on recent real estate sales in the Pennsylvania and is approximately 7.81 times the most recent assessment conducted in 1988. Source: Email from George Basila, Monroe County Planning Commission to Edward Maillett , U.S. Fish and Wildlife Service, "Assessment units ?" on 9 June 2008.

Table 2-6. Land ownership (in acres) for Monroe County municipalities in the Cherry Valley National Wildlife Refuge Study Area, Pennsylvania.

Landowner	Chestnuthill	Delaware Water Gap	Hamilton	Ross	Smithfield	Stroud	Grand Total	Percent Total
County	0.00	0.00	0.12	0.00	0.00	0.10	0.23	0.00%
Federal	0.00	511.73	1,483.54	236.04	681.46	273.73	3,186.48	10.34%
Municipal	40.72	164.50	46.64	53.46	666.60	153.99	1,125.90	3.65%
No owner information	0.00	0.00	33.01	3.16	1.15	11.62	48.93	0.16%
Private non-profit	109.12	0.00	446.61	10.47	0.00	31.79	597.99	1.94%
Private	1,149.13	315.95	9,843.43	5,508.68	1,246.14	4,354.12	22,417.44	72.73%
State Land	0.00	0.00	0.00	63.93	0.00	54.18	118.12	0.38%
Water Companies	0.00	0.05	3,120.50	208.17	0.00	0.00	3,328.72	10.80%
TOTAL	1,298.07	992.22	14,973.84	6,083.91	2,595.34	4,879.53	30,823.80[1]	------

[1] Total is less than the 31,500 acre Study Area because parcels outside of Monroe County were excluded from the analysis.

Source: Monroe County parcel data from 2006

Table 2-7. Estimated real estate tax receipts for 2008 by municipality for parcels within the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.

	2007 Assessment	Estimated Market Value[1]	2008 Millage Rate[2]	Estimated Tax Receipts[3]
Chestnuthill	$5,661,630	$44,217,330	0.153	$3,464,918
Delaware Water Gap	$7,577090	$59,177,073	0.16835	$5,102,412
Hamilton	$43,144,270	$336,956,749	0.15375	$26,533,726
Ross	$15,634,190	$122,103,024	0.1505	$9,411,782
Smithfield	$15,328,350	$119,714,414	0.16952	$10,393,848
Stroud	$12,920,950	$100,912,620	0.16475	$8,514,906
Total	$100,266,480	$783,081,209		$63,421,592

[1] Estimated current market value was calculated using the Pennsylvania state multiplier of 7.81 provided by the Monroe County Assessors Office .
[2] Millage rates provided by Monroe County Assessors Office, September 2008.
[3] Estimated tax receipts computed as follows: (2007 assessment) * 4 * 2008 millage rate.

The fiscal impact to Monroe County and its municipalities, if a refuge is established, would depend on both the quantity of land acquired and the rate of acquisition. While land owned by the U.S. Government is not taxable by state or local authorities, the federal government has a program in place to compensate local governments for foregone tax revenues. The Refuge System typically makes an annual payment in lieu of taxes to local governments. The amount of the payment depends on the final Congressional budget appropriations for the Service for that year. Recently, the payment has been less than what the state or local government may have received through normal taxation. It should be noted that the parcels with the highest assessed value within the Study Area (i.e., residential, industrial, and retail) are parcels that have the least desirable characteristics for natural resource conservation.

Table 2-8 shows the breakdown of the most recent real estate assessment by land use conducted in 1988. Open space parcels account for 21 percent of the parcel assessments in the Study Area, while developed parcels account for the remaining 79 percent. This contrasts to the total acreage of open and developed space parcels, which accounted for nearly 70 and 30 percent of the Study Area, respectively. Given the likelihood of limited funding and the fact that open space parcels would most likely be targeted for land protection, if a refuge is established, it is expected to have minimal fiscal impact on the affected county and townships in the near future.

Table 2-8. Estimated Tax Receipts by Land Use Classification in the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.

Land Category	Land Use	2007 Assessment	Percent of Grand Total Assessment	Current Market Value[1]	Estimated Tax Receipts[2]
Open Space Parcels	Agriculture	$6,038,240	6.0	$47,158,654	$3,864,474
	Communication/Transportation/Utilities	$1,583,010	1.6	$12,363,308	$1,013,126
	Forest	$5,299,650	5.3	$41,390,267	$3,391,776
	Public/Private Parks	$3,392,960	3.4	$26,499,018	$2,171,494
	Vacant	$4,801,600	4.8	$37,500,496	$3,073,024
	subtotal	**$21,115,460**	**21.1**	**$164,911,743**	**$13,513,894**
Developed Parcels	Hotels/Camps	$8,752,530	8.7	$68,357,259	$5,601,619
	Industrial	$2,358,120	2.4	$18,416,917	$1,509,197
	Residential	$60,091,860	59.9	$469,317,427	$38,458,790
	Retail/Services	$5,128,190	5.1	$40,051,164	$3,282,042
	Other	$2,820,320	2.8	$22,026,699	$1,805,005
	subtotal	**$79,151,020**	**78.9**	**$618,169,466**	**$50,656,653**
Grand total		**$100,266,480**	**100.00**	**$783,081,209**	**$64,170,547**

[1] Estimated current market values were calculated using the Pennsylvania state multiplier of 7.81.

[2] Estimated tax receipts were calculated using the following equation: (2007 Assessment) * 4 * (average millage rate of 0.160.)

2.4.3 Land Use Trends

For generations, Cherry Valley's rural character has been preserved by local landowners. They have safeguarded the area's clean waters and unique habitats out of a long-held respect for the landscape. However, intergenerational land transfer, increasing land values and real estate taxes, and decreasing farm income are placing greater pressure on the landowners in Cherry Valley.

Located less than two hours by car from Philadelphia and New York City, Cherry Valley's quiet landscape is threatened by an onrush of residential development. Several small and modest-sized developments have popped up in the valley and single family home development is proceeding at a brisk pace. In addition to attracting new residents, the valley's rural character, quality of life, and lower taxes have also sparked a trend in the conversion of seasonal homes to year-round residences.

During the 1990s, housing starts increased dramatically in Monroe County (Table 2-9). For example, the number of housing units increased by 45 percent in Hamilton Township between 1990 and 2000 (HJP Open Space and Recreation Plan 2003). Since

Table 2-9. Single family building permits per year for 1998 through 2007 for Monroe County, Pennsylvania.

Year	Permits	Annual Change	Total Cost	Annual Change	Average Cost	Annual Change
1998	1,130	0.00%	$137,446,018	0.00%	$121,634	0.00%
1999	1,367	21.00%	$191,829,977	39.60%	$140,329	15.40%
2000	1,481	8.30%	$207,892,568	8.40%	$140,373	0.00%
2001	1,510	2.00%	$224,358,519	7.90%	$148,582	5.80%
2002	1,573	4.20%	$253,352,319	12.90%	$161,063	8.40%
2003	1,679	6.70%	$286,709,547	13.20%	$170,762	6.00%
2004	1,645	-2.00%	$306,610,397	6.90%	$186,389	9.20%
2005	1,610	-2.10%	$314,059,152	2.40%	$195,068	4.70%
2006	1,399	-13.10%	$311,573,822	-0.80%	$222,712	14.20%
2007	900	-36%	$191,036,244	-39%	$212,262	-5%

Source: U.S. Census Bureau, http://www.census.gov/const/www/permitsindex.html. [Online] Accessed May 2008.

2004, building permits have declined in Monroe County. For the six municipalities that overlap with the Study Area, total combined single family building permits began to decline in 2002 (Table 2-10). It is not entirely clear what has caused this decline, though similar trends are seen in other Monroe County municipalities. Similar to other areas in the country, Monroe County experienced record foreclosures in 2007 (Pierce 2008a) and looks to set a new record in 2008 (Pierce 2008b) as the mortgage credit crisis continues. According to a recent article in the Pocono Record there were 1,253 foreclosure filings in 2007 (Pierce 2008a). Meanwhile, after nearly doubling in value between 1998 and 2006, home prices fell by 5 percent in 2007 (Table 2-9).

Table 2-10. Single family building permits per year for 2000 through 2007 for townships within the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.

Year	Chestnuthill	Delaware Water Gap	Hamilton	Ross	Smithfield	Stroud	Total
2000	152	1	55	72	112	203	595
2001	160	0	75	64	46	264	609
2002	159	5	81	66	65	218	594
2003	169	3	53	44	59	217	545
2004	113	5	40	44	46	181	429
2005	88	2	27	26	55	114	312
2006	63	0	23	14	67	113	280
2007	46	0	17	18	11	80	172
Total	**950**	**16**	**371**	**348**	**461**	**1,390**	**3,536**

Source: Monroe County Planning Commission (2008)

2.4.4 Land Use Planning

In light of land use trends in Cherry Valley during the 1990s, local municipalities recognized the need for balancing environmental and resource protection with an increasing population base (The Stroud Region Open Space and Recreation Commission 2002). One outcome has been increasing support for more open space, greenways, and recreation areas (Table 2-11). For example, Monroe County's comprehensive plan, adopted in 1999 (Monroe County Planning Commission 1999), and the Monroe County Open Space Plan, adopted in June 2001 (Bloss Associates 2001), resulted in all 20 of the

county's municipalities preparing joint open space plans which were partially funded by a Growing Greener planning grant. This enabled municipalities, organized as regions, to develop park, recreation, and open space plans with the goal of addressing present and projected needs of the public and natural resources.

Table 2-11. Open Space Planning and Conservation Efforts in the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.

Organization	**Planning Effort**
The Brodhead Watershed Association	The Brodhead Watershed Association is leading an effort to develop a conservation plan for the Cherry Creek Watershed, from the headwaters near Saylorsburg to the mouth in Delaware Water Gap. The Cherry Creek Watershed Conservation Plan will include an inventory of natural, recreation and cultural resources; an analysis of the current conditions; uses and issues facing the watershed and an action plan for improved conservation and management of the Cherry Creek watershed.
Monroe County Planning Commission	Administered by the Monroe County Planning Commission, the Monroe County Open Space Program works on the allocation of the $25 million bond that was passed by voter referendum in 1998. Funding was available for land acquisitions, conservation easements, and agricultural easements by municipalities, land trusts, and the county. Several projects in Cherry Valley have been partially funded from the open space bond. The Commission is also developing a Map of Potential Conservation Lands identifying those parts of undeveloped properties where the municipalities have preliminarily determined the importance of designing new development in such a way that an interconnected network of conservation land can be protected.
Delaware Water Gap Open Space Committee	Following up on the recently completed Eastern Monroe Regional Open Space Plan, the Delaware Water Gap Open Space Committee is looking at several properties as potential park sites.

Organization	Planning Effort
Hamilton, Jackson, Pocono Townships (HJP) Regional Open Space Committee	The HJP Open Space and Recreation Plan (HJP Regional Open Space Committee 2003) is a comprehensive Multi-Municipal Plan developed to establish both short- and long-term goals for each township's open space conservation, recreation and resource protection objectives. This Plan is in draft format.
Smithfield Township Open Space Committee	Following up on the recently completed Eastern Monroe Regional Open Space Plan, the Smithfield Open Space Committee is looking to acquire select park properties for active recreation, passive recreation, and trail links.
Stroud Township Environmental Advisory Committee (EAC)	The Stroud Township EAC makes recommendations to the Township Supervisors on the acquisition of land and/or conservation easements. The EAC is currently developing acquisition criteria and program procedures. The program is funded with a 0.25% Earned-Income Tax approved by Township voters in November 2001.
Growing Greener Subdivision Design Review	These audits provide recommendations on how the conservation subdivision design technique can be incorporated into a municipality's ordinances. Audits were conducted for Delaware Water Gap Borough and Hamilton, Smithfield, and Stroud Townships. Hamilton, Smithfield, and Stroud have been revising their ordinances to promote conservation techniques in the subdivision process.
Hamilton, Stroud, Pocono, Stroudsburg Comprehensive Plan Committee	This plan will help municipalities identify and address regional issues such as sewer and water, emergency services, agricultural preservation, transportation, and developments of regional scope. Planning jointly for these issues can eliminate duplication of efforts, encourage communication between municipalities and create opportunities for more efficient use of resources.

Source: Friends of Cherry Valley (2008).

In addition to forward-thinking land use planning at the county and municipal level, there is growing interest in protecting an interconnected network of green space and trails in Cherry Valley. Preserving corridors of green space along streams and ridgelines will keep wildlife and fisheries habitat connected throughout the watershed.

Establishing a protected green infrastructure network in Cherry Valley could also have benefits for people, as some areas could have trails for walking, hiking, and bicycling (BLOSS Associates 2004). Such an effort would involve linking protected areas that are already in place at the federal, state, and local levels. Non-profit organizations, private landowners, and Monroe County are also collaboratively engaged in a number of voluntary programs to promote land and water conservation in the Cherry Valley Study Area (Table 2-12).

Table 2-12. Land and Water Conservation Activities in the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.

Program	**Description**
Monroe County Agricultural Land Preservation Program	Protects and promotes agricultural uses of valuable agricultural lands through conservation easements from willing property owners.
Agriculture Security Areas	Agricultural Security Areas help protect our quality farmland from urbanization of rural areas. This voluntary program protects farmers from nuisance complaints, local ordinances affecting farming activity, and condemnation. An ASA also can qualify land for consideration under the Monroe County Agricultural Land Preservation Program at the landowner's request. Farmers create an ASA by submitting petitions to township supervisors. A minimum of 250 acres from among all participating farmers is required.
Resource Inventories	Cherry Creek Stream Watchers, The Nature Conservancy, Stream Walkers
Kittatinny Ridge Conservation Project	Collaborative effort of local, regional and state organizations and agencies to focus public attention on the importance of Blue Mountain as a way of fostering responsible stewardship for future generations.

Source: The Nature Conservancy (2003)

2.5 Socioeconomic Environment

2.5.1 Local Culture

Local residents take pride in Cherry Valley and value the area's rural way of life. Several farms in the valley are still called by names of residents who many years ago made their mark on the area (Friends of Cherry Valley 2008). Activities commonly reported in Cherry Creek watershed include gardening, bird watching, hiking, biking, hunting, fishing, horseback riding, and cross-country skiing. The same values that have shaped the landscape over the years also frame concerns related to the loss of agricultural land and open space to development, air and water quality, litter, wetland destruction, and increased traffic (BLOSS Associates 2004).

2.5.2 Archeological and Historical Resources[6]

Native American History and Early Settlement
People have been drawn to this stream corridor for at least ten thousand years. Although no comprehensive archaeological excavations have been undertaken in the valley, local farmers and residents continue to find artifacts of the Lenni-Lenape people whose occupation of the land preceded European settlers by thousands of years. Near the mouth of Cherry Creek along the Delaware River, archaeologists (under commission by the federal government) conducted numerous excavations during the 1960s and 1970s. They uncovered evidence of extensive habitation by Native Americans, including stone tools and sundry artifacts, and evidence of long-term settlement such as hearths, burial grounds, and postmold holes for longhouses.

Dating back to 8640 BC, and continuing to the time of European-Native American contact, the remains of the Lenape indicate that these people inhabited the valley continuously from Paleo-Indian times until and immediately following settlement of the area by European colonists. Early records of contact between Native Americans and European colonists in the area date to 1609, and there are detailed accounts of the 1742-meeting between Chief Kakowatchiky of the Shawnee and Count Zinzendorf, founder of the Moravian Church.

Although still considered frontier during the French and Indian War, Cherry Valley was well settled by European colonists before the middle 18th century. Baptismal records of the Christ Hamilton Lutheran Church date as early as 1752 and provide the names of a

[6] Unless otherwise referenced, the information in this section was provided by John K. Leiser, Ph.D. Assistant Professor of Biology, Northampton Community College and was compiled from primary sources at the Monroe County Historical Association. Source: Email from Dr. John K. Leiser, Assistant Professor of Biology, Northampton Community College to Nels C. Johnson, Pennsylvania Director of Conservation Programs for The Nature Conservancy, "Cultural Resources in Cherry Valley" on 9 May 2008.

large congregation of mostly German settlers who lived and worshiped within the valley. This church remains a vital part of Cherry Valley today, and the structure and its cemetery are listed on the National Register of Historic Places.

Agriculture

The fertile soil and relatively flat landscape of Cherry Valley have long supported the area's farming tradition. The continuous use of Cherry Valley for agriculture is evidenced by the present-day agricultural fields found throughout the valley that are dotted with the farmhouses of some of the original families who settled the area. Among the oldest is the still-occupied Aaron Depui House, a stone structure built in 1725 by Aaron Depui, son of Nicholas Depui, the first European settler in Monroe County. Others include the 1748 Shaw-McDowell Farmhouse as well as the 1816 Peter Kester House. Kester had served as a contractor for the Christ Hamilton Church, and the church's parsonage, constructed in 1837, was modeled after his home. Although a number of other homes within the valley date to the late 1700s and early 1800s, none are currently listed on the National Register for Historic Places.

Today, farms within Cherry Valley principally produce hay and corn for tenant farmers. An exception is the Porter Farm, site of Cherry Valley Community Supported Agriculture (CSA) initiative, which provides a variety of fresh produce to over eighty local families during the growing season. The diversity of crops grown by the CSA reflects centuries-old traditions within the valley. For example, the 1850 Agricultural Censuses for Smithfield and Middle Smithfield townships indicate that local farmers produced potatoes, buckwheat, hay and other crops for personal consumption and sale.

Cherry Valley provides an increasingly rare window into how pastoral landscapes once looked in much of eastern Pennsylvania, and provides unique habitats compared to the rock-covered woodlands of much of the Pocono Mountains. The long tradition of agriculture and life in the valley are threatened by changing land use patterns and by fields that are left fallow and are over-taken by invasive plant species.

2.5.3 Human Population

The population of Monroe County has increased significantly over the years. In fact, development pressure is a primary concern in the area as it threatens the county's ecology and natural beauty. According to data provided by the U.S. Census, the population in Monroe County has changed from 138,687 in 2000 to 165,685 in 2006 (Table 2-13). This equates to a nearly 20 percent increase in total population for the county. In contrast, the state population increased by approximately one percent over the same period. Population within the Study Area is estimated to be about 9,300 or approximately seven percent of the county's 2000 population. Table 2-13 provides a summary of how population has changed since 2000 within the Study Area, and compares this change to the overall change for Monroe County and the State of Pennsylvania.

Table 2-13. Population in Cherry Valley National Wildlife Refuge Study Area, Monroe County, and Pennsylvania.

	2000	2006	Percent change
Study Area	9,304[1]	n/a	
Monroe County	138,687	165,685	19.5
Pennsylvania	12,281,054	12,440,621	1.3

[1] Refuge boundary population estimates are based on census block groups and Division of Economics GIS analysis June 2008. Study Area population estimate does not include the addition of the Lower Cherry Creek section.
Source: www.fedstats.gov/qf/states/42/42089.html

A significant amount of population growth is attributable to an influx of workers and families from the greater New York metropolitan area seeking more affordable housing (Cohen 2008). Monroe County commuting time is over 30 percent higher than the state average. Many of these workers commute into Manhattan via Martz Trailways, nearly a two-hour journey along Interstate 80. The majority of the Monroe County newcomers reside in new housing developments built outside of the Study Area.

Table 2-14 presents total population estimates in years 1990 and 2000 for the townships within the Study Area along with an estimate of the population residing within the Study Area. Of the 9,300 individuals residing within the Study Area, over 60 percent resided in either Hamilton or Ross townships. Population increases were greatest in the townships of Chestnuthill, Smithfield, and Stroud. For the latter two, population increases within the Study Area were twice that of the townships in general.

Overall, between 1990 and 2000, the population within the Study Area increased 28 percent. This rate was less than the total growth rate for the townships that have property included in the Study Area (36 percent) and for Monroe County (45 percent), indicative of the relative rural nature of the area. Nonetheless, a 28 percent increase reflects significant change for the area. By comparison, state population changed by only 3.4 percent over the same period, while overall U.S. population changed by 13 percent, which reflects huge population growth in the Southeast and West. Future population growth in Monroe County is expected to remain strong with as many as 70,000 new residents expected by 2020 (BLOSS Associates 2001).

Table 2-14. Population for Monroe County and municipalities in the Cherry Valley National Wildlife Refuge Study Area, Pennsylvania.

Municipality	Total Population			Study Area Population[1]		
	1990	2000	Change	1990	2000	Change
Chestnuthill	8,554	14,598	71%	969	1,642	69%
Delaware Water Gap	436	562	29%	113	52	-54%
Hamilton	6,511	7,004	8%	3,537	3,509	-1%
Ross	3,671	5,768	57%	1,629	2,288	40%
Smithfield	6,106	6,692	10%	470	841	79%
Stroud	11,583	15,515	34%	558	972	74%
Township Total	36,861	50,139	36%	7,276	9,304	28%
Monroe County Total	95,709	138,572	45%	--	--	--
PA Total	11,881,643	12,281,054	3.4%	--	--	--
U.S. Total	248,709,873	281,421,906	13.2%	--	--	--

[1] Study Area population estimates exclude the Lower Cherry Creek addition.
Source: 1990CensusMuniBnds.xls; CensusBlocks 2000 MuniBounds; US FWS Division of Economics GIS analysis (Monroe County Population). May 29, 2008.

2.5.4 Economic Activities and Trends

Residents in the six municipalities overlapping with the Study Area tend to be younger, more affluent and better educated than the average person in Monroe County and in Pennsylvania (Table 2-15). Median household size also tends to be somewhat higher reflecting a higher proportion of families with dependent children.

Total employment in Monroe County in 2005 was 75,728.[7] Since 2001, Monroe County has experienced a net increase of over 7,600 new jobs. Over 40 percent of total employment in 2005 occurred in one of three economic sectors – government-related, retail trade, and services (Table 2-16). Of the three, government and government enterprises employed the greatest number of workers in 2005 (12,748), representing almost 17 percent of total employment. Less than one-half of one percent of total county employment (264) worked on farms. Since 2001, farming employment has decreased by about four percent.

[7] Source: Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce; CA25N Footnotes; http://www.bea.gov/regional/reis/CA25Nfn.cfm; Accessed 13 December 2007.

Table 2-15. Median household income, household size, education attainment and median age for Monroe County municipalities in the Cherry Valley National Wildlife Refuge Study Area, Pennsylvania.

Municipality	Median Household Income	Average Household Size	High School or higher (%)	Bachelors or higher (%)	Median age
Chestnuthill	$50,210	2.91	84.7	18.9	36.8
Delaware Water Gap	$37,708	2.16	84.6	30.3	36.0
Hamilton	$47,327	2.64	84.6	23.8	39.9
Ross	$48,750	2.87	80.5	17.5	37.9
Smithfield	$51,607	2.66	85.4	22.9	38.5
Stroud	$53,428	2.69	86.0	25.8	39.4

Source: U.S. Census Bureau 2000

The fastest growing employment sectors in the county were educational services and transportation and warehousing. The total employment in these sectors grew by 88 percent and 43 percent, respectively, since 2001. In addition to farming, Monroe County also saw a decrease in employment in the manufacturing and wholesale trade sectors. All other sectors had a net gain in employment between 2001 and 2005. Table 2-16 provides a detailed description of employment in Monroe County in the years 2001 and 2005.

Despite these larger trends, Cherry Valley continues to host a number of active farms and other enterprises that are compatible with open space conservation including a winery, an apiary, two golf courses, and a tree nursery. The tourism industry thrives in Cherry Valley as a result of its proximity to the Pocono Mountain area (Brodhead Watershed Association 2008).

Table 2-16. Employment data for Monroe County, Pennsylvania.

	2005	% of total	2001	% of total	% Change 2001 - 2005
Total employment	75,728	100.0%	68,112	100.0%	11.2%
Farm employment	264	0.3%	275	0.4%	-4.0%
Nonfarm employment	75,464	99.7%	67,837	99.6%	11.2%
Forestry, fishing, related activities, and other	65	0.1%	n/a	n/a	n/a
Mining and Utilities	179	0.2%	135	0.2%	32.6%
Construction	5,691	7.5%	4,828	7.1%	17.9%
Manufacturing	5,373	7.1%	5,423	8.0%	-0.9%
Wholesale trade	1,387	1.8%	1,401	2.1%	-1.0%
Retail trade	10,932	14.4%	10,314	15.1%	6.0%
Transportation and warehousing	3,888	5.1%	2,708	4.0%	43.6%
Information, Finance, Insurance, and Real Estate	6,591	8.7%	6,474	9.5%	1.8%
Professional, management, admin & waste services	7,668	10.1%	6,511	9.6%	17.8%
Educational services	852	1.1%	452	0.7%	88.5%
Health care and social assistance	6,375	8.4%	5,192	7.6%	22.8%
Arts, entertainment, and recreation	2,686	3.5%	2,144	3.1%	25.3%
Accommodation and food services	6,831	9.0%	7,339	10.8%	-6.9%
Other services, except public administration	4,198	5.5%	3,750	5.5%	11.9%
Government and government enterprises	12,748	16.8%	11,048	16.2%	15.4%

Source: Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce; CA25N Footnotes; http://www.bea.gov/regional/reis/CA25Nfn.cfm. Accessed December 13, 2007

2.5.5 Recreational Activities and Trends

As a limestone valley surrounded by a number of unique ecosystems, it's no surprise that numerous local residents and visitors enjoy Cherry Valley's natural resources and scenic beauty for recreation. Some of the more prominent recreational areas and activities include:

Exploring the Appalachian Trail.

Within Cherry Valley, the AT runs along Kittatinny Ridge, which serves as the Study Area's southern boundary. Completed in 1937, the AT "traverses the wild, scenic, wooded, pastoral, and culturally significant lands of the Appalachian Mountains"(National Park Service, "Appalachian National Scenic Trail"). It consists of 2,175 miles of footpath that stretches through 14 states from Maine to Georgia (National Park Service "Appalachian National Scenic Trail"). The AT traverses eight National Forests, six National Park Service units, one National Wildlife Refuge and about six dozen state parks and forests and is often referred to as the nation's longest and most accessible National Park. Each year, between three and four million visitors spend time along portions of the AT, including at Wolf Rocks in Stroud Township, which is considered one of the outstanding viewpoints along the AT in eastern Pennsylvania (USDA 2008).

Visiting the Delaware Water Gap National Recreation Area.

The Delaware Water Gap National Recreation Area ranked number eight on the list of top ten National Parks visited during 2007, with 4.84 million visitors (National Park Service, "NPS Stats, Ranking Report for Recreation Visits."). One of the most striking natural features in Pennsylvania, the highly scenic Delaware Water Gap National Recreation Area encompasses approximately 70,000 acres along 40.6 miles of the Delaware River (National Park Service, Delaware Water Gap National Recreation Area Park Management). Because it is close to urban areas and major transportation corridors, this National Recreation Area is highly accessible to the ever-growing numbers of vacationers and new residents being drawn to the Poconos and the Delaware Highlands regions for the natural beauty and intensive, water-oriented recreational activity.

Hunting, Fishing, Wildlife Viewing.

Its forests and streams, ponds and bogs, and dramatic ridges make Cherry Valley an ideal place for some of the region's most charismatic and well-known species, including white-tailed deer, black bear, and beaver. Many of these species are abundant, attracting sport and game enthusiasts to the area throughout the year.

Common in Pennsylvania, hunting is an important tool for managing wildlife populations. Bear and deer attract hunters to the Kittatinny Ridge, and hunting occurs on private lands throughout the valley. Turkey, ruffed grouse, and American woodcock

populate many forest areas while a variety of waterfowl frequent wetlands and lakes especially during spring and fall migrations (WPC 2008). In 2006, over 7,000 residential adult hunting licenses were sold in Monroe County. The Pennsylvania Game Commission maintains harvest estimates at the Wildlife Management Unit level (WMU) for deer and bear. Cherry Valley is in WMU 3D (one of 17 WMUs in Pennsylvania), which had an estimated deer harvest of 10,793 and a documented bear harvest of 193 in 2007 (Pennsylvania Game Commission 2008). Specific estimates for the Study Area are not available.

Cherry Valley also represents a popular destination for fishing. Much of the Cherry Creek watershed is classified as a high quality cold water and migratory fishery under Pennsylvania's water quality criteria (PA Code Title 25, Chapter 93). The Pennsylvania Fish and Boat Commission classifies a portion of the creek and several tributaries in the watershed as Class A wild trout streams, signifying the presence of significant populations of wild brook and brown trout. The Pennsylvania Fish and Boat Commission reports over 13,000 residential fishing licenses were sold in Monroe County in 2006. At least one private fishing club has purchased fishing rights in Cherry Creek.

In addition to hunting and fishing, Cherry Valley serves as a destination for wildlife viewing. Most notably, the Kittatinny Ridge retains some of the most extensive natural areas in southeastern Pennsylvania, and has long been recognized as one of the major east coast fall flyways for migrating raptors.

2.5.6 Soundscape

Emerging science on natural soundscapes shows the importance of recognizing and documenting local, natural soundscapes. These soundscapes are considered to be an essential part of a landscape, its representative and "vocal" wildlife, and one's personal experience in the wild, whether in a park, wilderness, refuge, or similar form of natural landscape. As with other regions in North America, natural soundscapes have suffered greatly, mostly within the last 20 years. There are two main contributors to these changes: habitat destruction and an increase in human noise due to aircraft and land-based machinery the impact of which is observed miles from the source (Krause 1999).

There is no specific information on the soundscape of Cherry Valley but there are clearly the sounds and noises of a developed community. Traffic, airplanes, heavy equipment operation, farm machinery, building construction, road construction, and the like, contribute to community noise and disturbance in varying degrees. These disturbances can be a feature of a degraded environment, and impacts due to human-induced noise need to be mitigated wherever possible. Areas with the loudest human-induced noise are likely to be a corridor along Pennsylvania Route 33 (a four lane divided highway) and within close proximity to the quarry in Hamilton Township.

2.6 Conclusion

Cherry Valley is home to at least 80 species and natural communities of concern. Generations of local landowners have exercised great stewardship in caring for these resources, and there are many existing programs in place to help protect local landowners who are interested in conservation. However, the existing pressures are greater than the existing programs. A new refuge could provide local landowners with one additional tool to conserve their natural and cultural heritage as they consider the future of their land. And, importantly, it could bring significant financial resources to help meet the area's conservation challenges. In addition, a refuge could provide additional staff resources to help inventory, manage, and restore habitat for native plants and wildlife in the area.

3 Alternatives

This chapter presents the alternatives for a proposed refuge in Cherry Valley including the Service's preferred action that we believe would best fulfill the intent of the Study Act and the proposed purposes, vision, and goals of a new national wildlife refuge in Cherry Valley, first presented in Chapter 1.

The goals are intentionally broad, descriptive statements of the desired condition of proposed refuge land in Cherry Valley. They embrace the principal elements of the Study Act, the proposed refuge purposes, and the proposed vision statement. Descriptions of the three alternatives, one of which is the preferred action, address the three proposed goals in narrative form, and offer an explanation of how the alternatives meet, or don't meet, the requirements of the Study Act and the proposed refuge's goals. The preferred action (Alternative B) is addressed in more detail in the final Conceptual Management Plan (Appendix B). As described in Chapter 1, a Conceptual Management Plan provides general, interim management direction for a new refuge until approval of a considerably more detailed Comprehensive Conservation Plan. If the refuge is approved, we will develop a Comprehensive Conservation Plan sometime thereafter.

Under NEPA, the proposed action defines what an agency plans to do or recommend, but cannot implement without considering other reasonable, environmentally sensitive alternatives to the proposed action. Other reasonable alternatives to the preferred action that could also be viewed as fulfilling the intent of the Study Act were described in the Draft EA, thereby offering the Service and the reviewing public an opportunity to consider a range of reasonable alternatives for the proposed action, and thus fulfilling one of the key tenets of NEPA. These alternatives are also described herein. However, in this document (i.e., the Final EA) Alternative B is now the preferred action (rather than the proposed action), meaning it is the alternative the Service is recommending for approval.

3.1 Formulating Alternatives

This chapter describes the process for formulating alternatives and the activities they share in common. For ease in comparison, at the end of this chapter we have provided Table 3-4 that compares the acres of habitat associated with each alternative and Table 3-5 which compares the basic management approach for each alternative. Please refer to Chapter 2 – Affected Environment – for detailed descriptions of the Study Area's resources.

After identifying the goals for a proposed Cherry Valley NWR, we began developing alternatives. Alternatives describe complementary management approaches for achieving the missions of the Service and the Refuge System, the purposes for which a

refuge might be established, and its vision and goals, while responding to issues and opportunities identified during the planning process. We relied on the Study Act to guide our decisions regarding the proposed purposes for a new refuge.

We considered a number of alternatives but chose three to fully develop, including the NEPA required "No Action" alternative to provide a baseline for comparing the other two alternatives. There were two main alternatives we considered but did not fully develop. The first was an alternative focused mainly on protection of bog turtle habitat. We concluded that such a narrow approach would not honor the intent of the Study Act. The second included lands for protection in the Minsi Lake Corridor and Shawnee watershed (Figure 3-1) because of the recognized wildlife and habitat values, and the expressed interest from the public. However, we concluded these areas were never intended to be part of the study and should be considered for protection in a separate exercise. We believe the three alternatives presented in this document and their respective narrative descriptions represent a reasonable range of alternatives for achieving the Study Act purposes; the purposes, vision, and goals of the proposed refuge; and the alternatives address the issues described in Chapter 1.

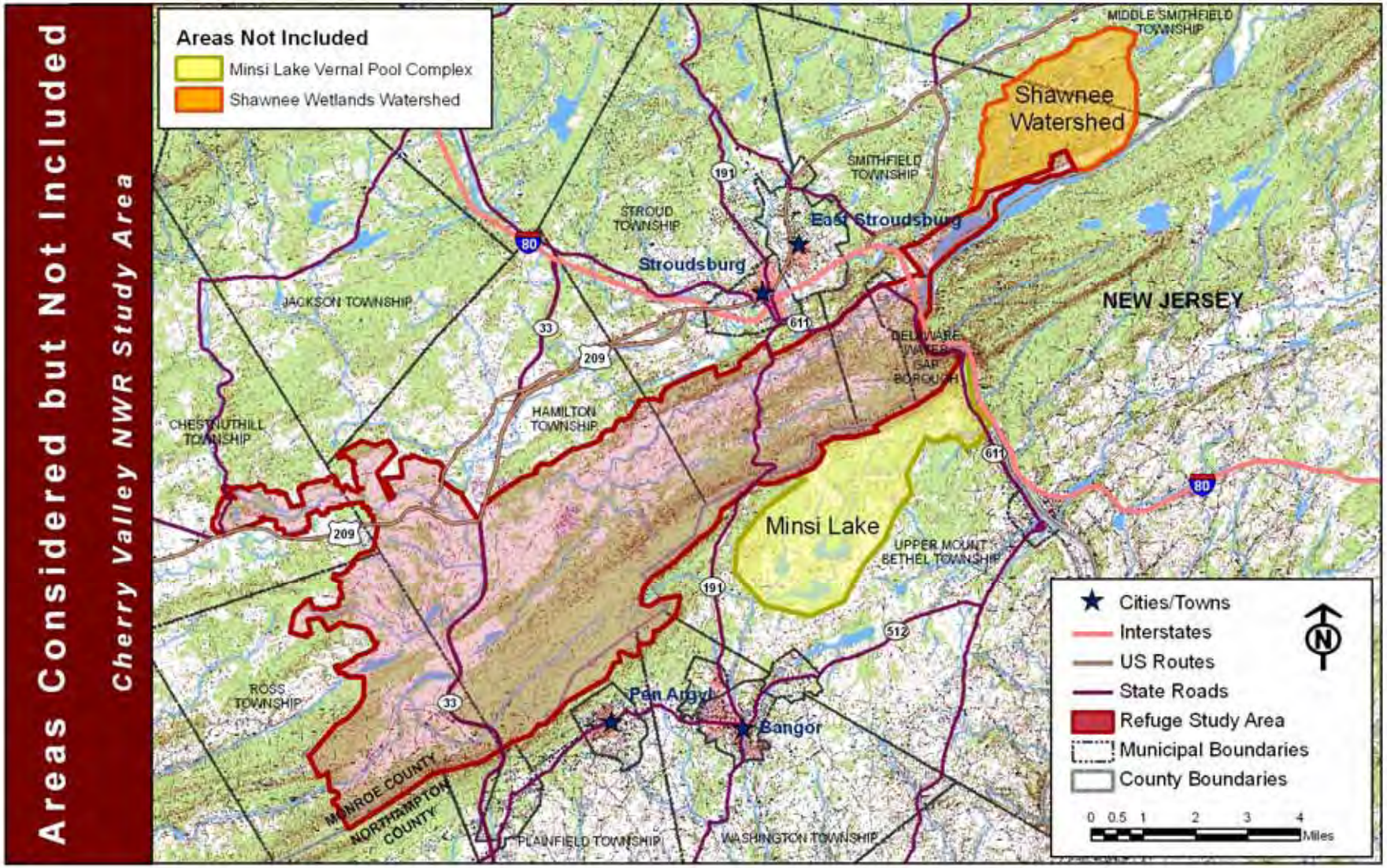


Figure 3-1. Areas outside of the Study Area that were considered but not included in the analysis of alternatives.

3.2 Alternatives

In brief, the alternatives we considered are:

Alternative A. – "No Refuge" This is the "No Action" alternative required by NEPA and serves as a baseline to which other alternatives are compared. In this alternative, there would be no new refuge and no designated acquisition boundary. Habitat protection and management would continue to be done by existing organizations and government programs. Currently there are 6,313 acres of lands protected by agricultural easements, private conservation, and municipal, state, and federal ownerships within the Study Area, of which 4,811 acres contain 12 of the defined Cherry Valley ecological systems (Table 3-1, Figure 3-2). There would be no new opportunities for refuge-based wildlife-dependent public uses, partnerships, or scientific research.

Alternative B. – "Diverse Habitat Complex." This is the Service's preferred action, i.e., this is the option the Service is recommending to establish a refuge. This alternative includes an acquisition boundary of up to 20,466 acres containing portions of 13 of the Study Area's ecological systems (Table 3-2, Figure 3-3). Protection of lands would be done through fee title (approximately 50 percent of the acres) and conservation easements (approximately 50 percent of the acres). This alternative would provide protection for more extensive habitat areas compared to Alternatives A and C, and would better enable the Service to meet the needs of both rare and more common species of wildlife. It would offer more compatible public use opportunities than Alternatives A or C, and would also provide opportunities for extensive, refuge-based partnerships and scientific research.

Alternative C. --"Wetlands and Ridge Forests." Complementing the 4,811 acres of the defined Cherry Valley ecological systems already under some protection, this alternative proposes an acquisition boundary of up to 14,124 acres containing portions of 12 of the Study Area's defined ecological systems (Table 3-3, Figure 3-4). Protection of lands would be accomplished through fee title (approximately 65 percent of the acres) and conservation easements (approximately 35 percent of the acres). This alternative would provide important protections and management opportunities for wildlife and habitats in the valley, especially for wetlands and Kittatinny Ridge forests. However, benefits, particularly for riparian and stream species (e.g., brook trout) and species associated with forested wetland ecological systems (see Table 3-4) would be considerably less. Compared to the No Refuge alternative, it would offer substantial opportunities for compatible public uses, along with new refuge-based partnerships and scientific research, but these would be substantially less than with the preferred action (Alternative B).

Within the narrative descriptions of each alternative, we describe possible management activities that would help meet the goals of a proposed Cherry Valley NWR. Maps are used to illustrate lands that could be included within a new refuge (Figures 3-2 through

3-4). Following those descriptions, Tables 3-4 and 3-5 provide side-by-side comparisons of the alternatives. We designed the tables to give the reader a quick overview of: 1) differences in acres by habitat type (Table 3-4); and, 2) actions that distinguish the alternatives and their relationship to the proposed goals and key issues (Table 3-5).

3.2.1 Alternative A – No Action

This alternative represents the current state of land protection activity in Cherry Valley without a refuge, thereby offering an important baseline to which the other alternatives can be contrasted. The Service would take no action within this alternative but would continue activities it has pursued over the last several years, noted below. We refer to this interchangeably as Alternative A, "No Action," or the "No Refuge" throughout this Final EA. Currently there are 6,313 acres of lands protected by agricultural easements, private conservation, and municipal, state, and federal ownerships within the Study Area, of which 4,811 acres contain 12 of the defined Cherry Valley ecological systems (Figure 3-2, Table 3-1).

Goal 1. Protect and enhance habitats for federal trust species and species of management concern, with special emphasis on migratory birds and species listed under the ESA, along with protection of wetlands and the Kittatinny Ridge.

Cherry Valley and its surroundings have areas of great natural resource value closely juxtaposed with areas of accelerated commercial and residential development. Residential properties, alone, cover nearly 20 percent of the Study Area. Open space parcels, which include agriculture, parks, forest, vacant, and in this case, property owned by utilities, together account for nearly 70 percent of the Study Area. To date, Cherry Valley has remained modestly developed, primarily due to the conservation ethic of residents, some of whom have negotiated the sale of their properties to conservation organizations. Other landowners have sold off the development rights to their property or placed their land in various types of agricultural and conservation easements. Funding for many of these projects was generated through a Monroe County Open Space Referendum that set aside monies to conserve open space throughout Monroe County; however, those funds are now exhausted.

Recently, however, development pressure has increased. Located less than two hours by car from Philadelphia and New York City, Cherry Valley's quiet landscape is threatened by the onrush of residential development. Several small and modest-sized developments have popped up in the valley and single family home development has been proceeding at a brisk pace. In addition to attracting new residents, the valley's rural character, quality of life, and lower taxes have also sparked a trend in the conversion of seasonal homes to year-round residences.

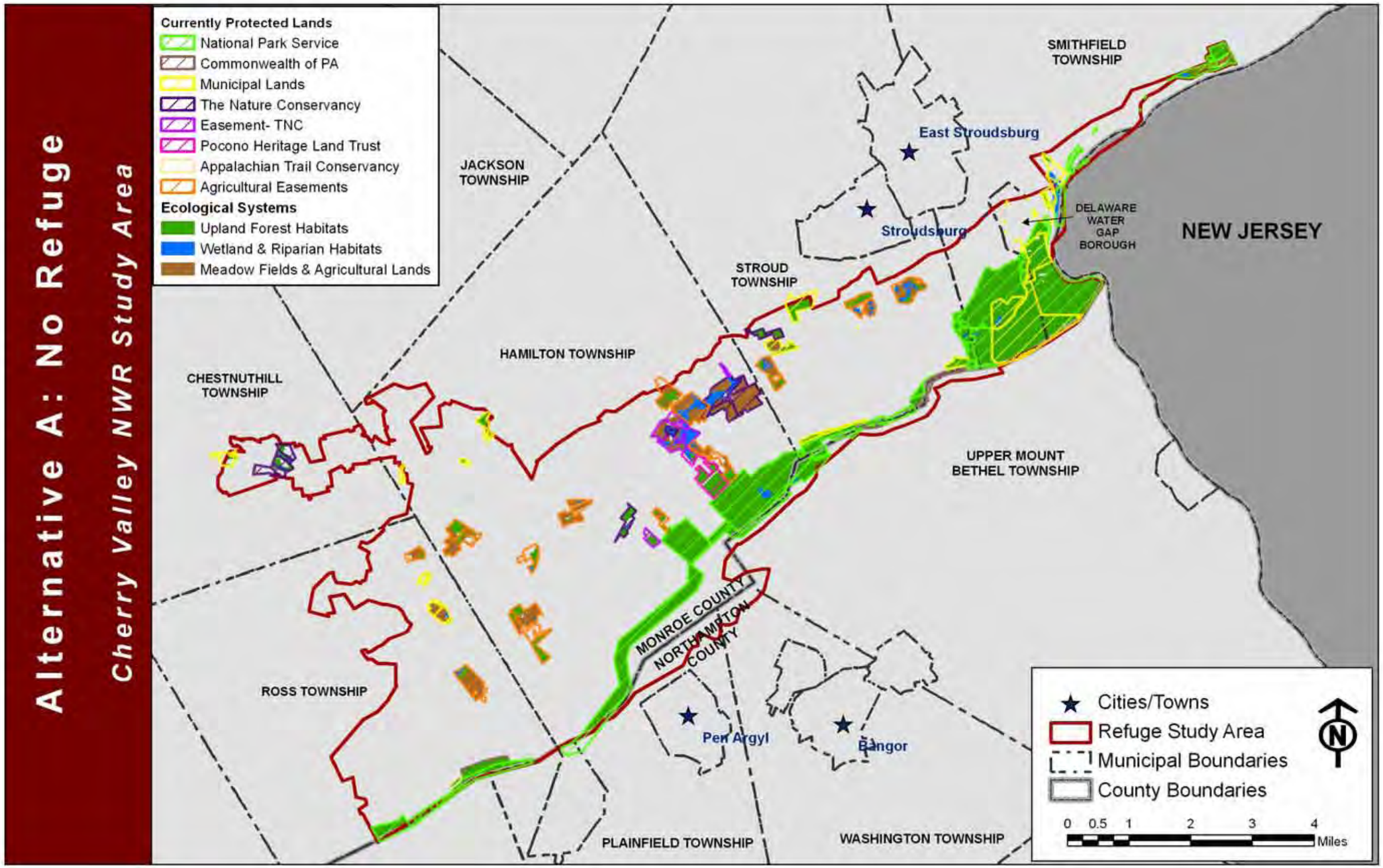


Figure 3-2. Map indicates existing conservation lands that would remain under Alternative A: No Refuge (No Action) within the Cherry Valley National Wildlife Refuge Study Area, Pennsylvania.

Table 3-1. Acres of ecological systems protected under Alternative A.

	Ecological Systems	*Acres*			
		Agricultural Easements	**Private Conservation**	**Municipal, State & Federal**	***Totals***
Upland Forest Habitat	**Appalachian (Hemlock)-Northern Hardwood Forest**	8.30	64.40	138.08	**210.78**
	Central Appalachian Dry Oak-Pine Forest	134.62	47.11	2,635.55	**2,817.28**
	Central Appalachian Dry Oak-Pine Rocky Woodland	0.00	0.00	55.67	**55.67**
	Northeastern Interior Dry-Mesic Oak Forest	131.68	129.20	1,015.80	**1,276.68**
Wetlands & Riparian Habitat	**Central Appalachian Floodplain**	0.00	0.00	94.01	**94.01**
	Central Appalachian Stream and Riparian	43.70	29.32	5.39	**78.41**
	Laurentian-Acadian Freshwater Marsh	0.00	0.17	0.00	**0.17**
	Laurentian-Acadian Wet Meadow-Shrub Swamp	70.86	92.30	10.23	**173.39**
	North-Central Appalachian Acidic Swamp	4.13	0.00	30.38	**34.51**
	North-Central Appalachian Seepage Fen	0.00	0.00	0.00	**0.00**
	North-Central Interior Wet Flatwoods	10.87	26.88	0.00	**37.75**
	North-Central Interior and Appalachian Acidic Peatland	0.00	0.00	8.55	**8.55**
	North-Central Interior and Appalachian Rich Swamp	6.56	17.54	0.00	**24.10**
	Ecological Systems Totals	**410.72**	**406.92**	**3,993.66**	**4,811.30**
	Total Parcel Acres[1] (31,585.8 total boundary acres)	**1,046.97**	**787.73**	**4,477.95**	**6,312.65**

[1] Property lines do not coincide with the Study Area boundary. Parcels have been divided to match the Study Area boundary as closely as possible, but total parcel acres exceeds the total Study Area because of rounding errors during parcel adjustments.

Much of the land already managed or protected in this physiographic area is forested (e.g., Delaware Water Gap National Recreation Area, State Game Lands, state forests and parks). The AT passes through the Study Area and the National Park Service and other partners own a buffer of land along the trail. The Service would continue to work closely with our conservation partners, all of whom are instrumental in helping us accomplish habitat restoration and protection activities, largely through our Partners for Fish and Wildlife Program, our statutory responsibilities under the ESA, and our advisory role under the Fish and Wildlife Coordination Act.

The Pocono Heritage Land Trust is a locally based conservation group dedicated to protecting important lands and waters, open space, agricultural landscapes, and the natural heritage of the Pocono Mountains region. It currently owns one large tract of land in the valley. Cooperative agreements with other conservation groups have resulted in restoration work on their property. The Nature Conservancy has been successful in Cherry Valley in protecting 1,000 acres through the purchase of land or conservation easements. The primary beneficiary of this effort has been the bog turtle, as numerous wetlands that provide habitat for this species have been protected and restored. Other prominent conservation partners with the Service include the Pennsylvania Natural Heritage Program, Pennsylvania Game Commission, Pennsylvania Fish and Boat Commission, and the Pennsylvania Department of Conservation and Natural Resources.

Taken together, the respective missions of the preceding groups provide an ability to assist in the protection of farmland, threatened and endangered species, scenic areas, grassland habitats, and open space that the local community has identified as significant. This collective ability, however, has proven to be too limited to meet the needs of an expanding population.

Based on this collective effort, Alternative A would maintain protection of 6,313 acres of lands currently protected by agricultural easements, private conservation, municipal, state, and federal ownerships, of which 4,811 acres contain 12 of the defined ecological systems in the Study Area. Habitats and their respective ecological systems for trust species and species of special management concern would continue to be protected through maintenance of these 4,811 acres (Table 3-1 above). Over 2,800 acres of Central Appalachian Dry Oak-Pine Forest and nearly 1,300 acres of Northeastern Interior Dry Mesic Oak Forest would serve as valuable habitat to breeding forest interior birds such as parula and black-throated green warblers. Over 450 acres of diverse wetlands are protected, contributing to the conservation of foraging bats, wetland birds, waterfowl, shorebirds, bobolink, woodcock, Eastern meadowlark, bog turtles, diverse reptiles and amphibians, mink, river otter, and other species. Over 1,000 acres are held in agricultural easements. These could contribute, if managed appropriately, to the conservation of declining grassland birds such as grasshopper sparrows, bobolink, and Eastern meadowlark.

Goal 2. Create opportunities for hunting, fishing, wildlife observation and photography, and environmental education and interpretation, while promoting activities that complement the purposes of the refuge and other protected lands in the region.

The Service seeks opportunities to promote wildlife-dependent recreation on its refuges. There would be no refuge-based opportunities under the “No Action” alternative. A number of wildlife related recreational activities exit within the valley and would continue. Hunting and fishing occurs in the valley under regulations administered

by the Pennsylvania Game Commission and the Pennsylvania Fish and Boat Commission. Much hunting occurs on private lands. Public hunting is currently limited to approximately 1,200 acres of state and municipal lands. The Pennsylvania Game Commission actively encourages youth hunting through several programs which could benefit from the establishment of a refuge in Cherry Valley.

Fishing includes both cold and warm water species. Flyfishing is popular along Cherry Creek, but public access is very limited. The Delaware River provides a variety of fishing opportunities for warm water and migratory fish species. Public fishing access is available, principally within the Delaware Water Gap National Recreation Area**.**

The Kittatinny Ridge is well known to bird watchers, especially enthusiasts who enjoy watching the extensive hawk migrations throughout the ridge and valley environment. This ridge is home to Pennsylvania's most important greenway. In the 1930s, the Appalachian National Scenic Trail was created along its spine, and the world's first conservation area for birds of prey, Hawk Mountain Sanctuary, was also established here to protect migratory raptors. The 150 mile long Kittatinny Ridge is recognized as a globally significant migration flyway, concentrating up to 20,000 migrating fall raptors. There are 12 recognized hawk watching sites along the ridge. Cherry Valley lies between the Delaware Water Gap site immediately adjacent to the east and the Hawk Mountain Sanctuary (Bake Oven Knob), 30 miles to the west. The ridge is also where people hike, hunt deer, fish for trout, ride bicycles, canoe, and enjoy beautiful fall colors. It provides clean water and ample forest resources for tens of thousands of people. The 2006 "Conservation Plan for Kittatinny Ridge Conservation Corridor" (Audubon Pennsylvania 2006) describes the value of the ridge in detail and includes protection of ridge habitat as a critical priority. Within the No Action alternative, about 4,360 acres of forested ridge habitat would remain protected.

Goal 3. Promote science, education, and research through partnerships to inform land management decisions and encourage continued responsible stewardship of the natural resources of Cherry Valley.

As referenced under Goal 1, there is an active partnership structured to promote land protection in the valley. Other partnerships exist to promote other aspects of the valley's character, principally its natural resource values. The Friends of Cherry Valley, Inc., is a private conservation organization. It was formed in 2003 to advance conservation and protection of valley resources. It has been and remains a strong advocate of a refuge in the valley. Other important existing partnerships include the Monroe County Conservation District, The Nature Conservancy, Pocono Heritage Land Trust, local municipal governments, the Monroe County Open Space Program, and others.

Cherry Valley currently maintains a firm foundation for conducting science and research within the field of natural resource management. East Stroudsburg University hosts a

strong Department of Biology that has participated in a variety of ecological studies over the years. Research and field studies are carried out by most of the conservation partners mentioned already, notably the Pennsylvania Game, Fish and Boat, and Natural Heritage Commissions. Pennsylvania State University maintains a Cooperative Fish and Wildlife Research Unit, which, for example, has recently surveyed the distribution and status of the dwarf wedgemussel within the northern Delaware River, a species that potentially can reestablish in Cherry Valley. This Unit, a cooperative effort with Pennsylvania State University's School of Forest Resources, the commissions noted above, and The Wildlife Management Institute, also conducts diverse research on black bear, trout, ruffed grouse, stream ecology, and a host of other subjects that may be useful to the Cherry Valley area.

Environmental education currently is performed in each of the school districts for the valley's municipalities: Ross, Chestnuthill, Hamilton, Stroud, and Smithfield townships and Delaware Water Gap Borough. The Monroe County Conservation District maintains a strong and active environmental education program. Its facilities are well designed for large school groups and organizations, and it maintains a trail system, gift shop, and interpretative displays**.**

3.2.2 Alternative B – Diverse Habitat Complex (Preferred Action)

The "Diverse Habitat Complex" alternative is the Service's preferred action. It offers the most comprehensive habitat and wildlife conservation effort without including areas of minimal conservation value. This alternative would fulfill the intent of the Study Act by creating an acquisition boundary of up to 20,466 acres within the 31,500 acre Study Area (Table 3-2, Figure 3-3). Alternative B contains portions of 13 of the ridge and valley's defined ecological systems, compared to the 12 ecological systems protected in Alternatives A and C (i.e., it includes the Central Appalachian Floodplain which is not included in Alternative A or C). Protection of lands would be done through fee title (about 50 percent of the acres) and conservation easements (about 50 percent of the acres). The Service concludes that this alternative would provide valuable protection for the numerous wildlife species and habitats referenced in the Study Act. Alternative B also would provide extensive opportunities for wildlife-dependent recreation, new and dynamic partnerships, and scientific research.

Table 3-2. Acres of ecological systems protected under Alternative B (preferred action).

		Acres				
		Proposed Refuge Lands				
	Ecological Systems	No Current Protection	Agricultural Easements & Private Conservation	Totals	Municipal State & Federal	Grand Totals
Upland Forest Habitats	**Appalachian (Hemlock)-Northern Hardwood Forest**	930.06	72.70	1002.76	138.08	**1,140.84**
	Central Appalachian Dry Oak-Pine Forest	7365.41	181.73	7547.14	2635.55	**10,182.69**
	Central Appalachian Dry Oak-Pine Rocky Woodland	17.88	0.00	17.88	55.67	**73.55**
	Northeastern Interior Dry-Mesic Oak Forest	4093.26	260.88	4354.14	1015.80	**5,369.94**
Wetlands & Riparian Habitats	**Central Appalachian Floodplain**	4.29	0.00	4.29	94.01	**98.30**
	Central Appalachian Stream and Riparian	261.97	73.02	334.99	5.39	**340.38**
	Laurentian-Acadian Freshwater Marsh	2.25	0.17	2.42	0.00	**2.42**
	Laurentian-Acadian Wet Meadow-Shrub Swamp	332.90	163.16	496.06	10.23	**506.29**
	North-Central Appalachian Acidic Swamp	275.39	4.13	279.52	30.38	**309.90**
	North-Central Appalachian Seepage Fen	13.70	0.00	13.70	0.00	**13.70**
	North-Central Interior Wet Flatwoods	76.25	37.75	114.00	0.00	**114.00**
	North-Central Interior and Appalachian Acidic Peatland	3.80	0.00	3.80	8.55	**12.35**
	North-Central Interior and Appalachian Rich Swamp	163.28	24.10	187.38	0.00	**187.38**
Ecological Systems Totals		**13,540.4**	**817.6**	**14,358.1**	**3,993.7**	**18,351.7**
Total Parcel Acres [1] ***(31,585.8 total boundary acres)***		**18,630.9**	**1,834.7**	**20,465.6**	**4,478.0**	**24,943.5**

[1] Property lines do not coincide with the Study Area boundary. Parcels have been divided to match the Study Area boundary as closely as possible, but total parcel acres exceeds the total Study Area because of rounding errors during parcel adjustments.

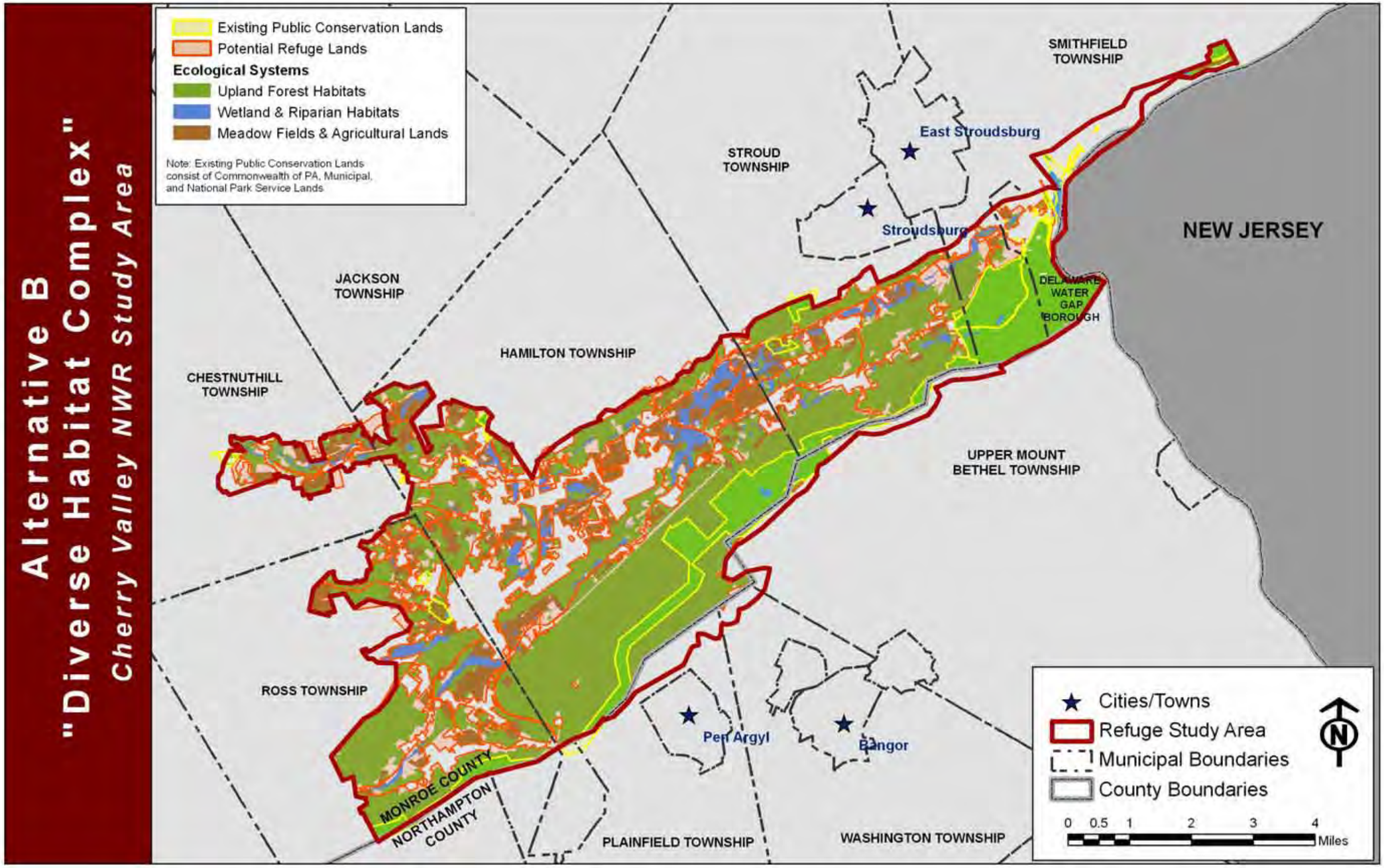


Figure 3-3. Map of ecological systems and habitats protected by Alternative B: Diverse Habitat Complex (preferred action) in the Cherry Valley National Wildlife Refuge Study Area, Pennsylvania.

Goal 1. Protect and enhance habitats for federal trust species and species of management concern, with special emphasis on migratory birds and species listed under the ESA, along with protection of wetlands and the Kittatinny Ridge.

Diverse habitats and their respective ecological systems for trust species and species of special management concern would be protected through this alternative (Table 3-2). Of the 20,466 acres proposed for protection, over 12,400 acres of upland forests could be protected, over 12,100 more acres than Alternative A and over 2,800 more acres than Alternative C. Compared to Alternative A (No Action), roughly 4,700 additional acres of Central Appalachian Dry Oak-Pine Forest and nearly 3,000 additional acres of Northeastern Interior Dry Mesic Oak Forest would be protected. Appalachian (Hemlock) – Northern Hardwood Forest would increase by 79 percent under Alternative B with an additional 790 acres compared to the No Action Alternative. These forests serve as valuable habitat for birds that breed in interior forests such as ruffed grouse, wood thrush, Eastern wood pewee, scarlet tanager, black-throated blue warbler, and worm-eating warblers.

Over 1,000 additional acres of emergent, scrub-shrub, and forested wetlands could be protected, compared to the No Action Alternative. Protecting these habitats would contribute to the conservation of foraging bats, wetland birds, waterfowl, shorebirds, bobolink, woodcock, turkey, Eastern meadowlark, bog turtles, wood turtles, diverse reptiles and amphibians, mink, river otter, and others. Additionally, over 3,400 acres of agricultural lands could become available for protection and could contribute, if managed appropriately, to the conservation of declining grassland birds such as grasshopper sparrows, bobolink, and Eastern meadowlark. Conserving this habitat would allow the Service to manage these lands for rare grassland birds that require 50+ acre sites for nesting habitat. In addition, in smaller grassland areas adjacent to forests, there may be ways to manage for early successional shrub habitat for woodcock.

Species priorities would include improving habitats for federally-listed species known to be present on the refuge, or known to have a high likelihood of reestablishment. Other priorities for the proposed refuge's habitat activities would include actions needed by neotropical forest birds, ridge-migrating raptors, migrating and wintering waterfowl, and grassland birds. Habitat management priorities would focus on wetland restoration, forest health and structural integrity, and maintaining and restoring grassland. The Service would consider appropriate means for controlling invasive plant species on the refuge and improving aquatic habitats for fish and invertebrates. Following are narratives for specific groups of plants and animals that may become subject to refuge management.

Migratory Birds

Cherry Valley lies within the Atlantic Flyway in northeastern Pennsylvania. Numerous neotropical songbirds, ridge migrating raptors, freshwater wetland birds, and waterfowl follow the Kittatinny Ridge as a travel corridor and take shelter, forage, and nest in the

forest, scrub-shrub, grassland, and wetland habitats that are found there. The proposed refuge is located in the Northern Ridge and Valley physiographic area, located within NABCI's Appalachian Mountains Bird Conservation Region (AMBCR or BCR # 28) (see Chapter 1, p. 1-10). AMBCR includes portions of 15 states and 11 Partners In Flight (PIF) physiographic regions covering 105 million acres. Based on Breeding Bird Survey data analysis, 86 of the 234 bird species that breed and winter throughout the AMBCR are declining, some significantly (Sauer et al. 2005). Populations for at least 33 species have greater than ten percent of their population in the Appalachian Mountains and at least ten species have greater than 25 percent of their population in the Appalachians. Remarkably, almost 80 percent of the entire cerulean warbler population occurs in the AMBCR. Shorebirds and waterbirds are not considered a high conservation priority within the AMBCR; however, some species such as spotted sandpiper, upland sandpiper, and American bittern occur locally. In addition, the Service has recognized six migratory bird species found within the Study Area as birds of conservation concern: wood thrush, prairie warbler, cerulean warbler, worm-eating warbler, Louisiana waterthrush, and peregrine falcon (USFWS 2002b; also see Appendix C, Table C-2).

Cerulean Warbler

The Cherry Valley Study Area is located within the Delaware River Planning Unit of the Atlantic Coast Joint Venture (ACJV) partnership. The ACJV is designed to help support the North American Waterfowl Management Plan. The Delaware River is recognized by the ACJV as an important spring and fall migration corridor for ducks and geese (ACJV Focus Area Report Delaware River Basin, Pennsylvania Focus Area: Pike County). The Delaware River Unit covers over 1.8 million acres and includes the entire non-tidal Pennsylvania portion of the Delaware River, as well as the eastern half of the Pennsylvania portion of the river's drainage basin. The portion of the planning area north of the Kittatinny Ridge is in the Appalachian Plateau and Ridge and Valley Physiographic Provinces, and is characterized by a rolling to mountainous, predominantly forested landscape with an abundance of natural wetlands. Pike County, just north of Cherry Valley, has been identified as the unit's focus area because of its especially high concentration of exceptional quality wetlands. North of the Kittatinny Ridge, the primary importance of the planning area to waterfowl is as breeding habitat for black duck and wood duck. Breeding mallard and resident Canada geese are common. Common and hooded mergansers also occur.

The Kittatinny Ridge is recognized as a globally significant migration flyway, hosting up to 20,000 migrating fall raptors every year (Hawk Mountain Sanctuary 2008). This ridge is home to the world's first conservation area for birds of prey, Hawk Mountain Sanctuary, established in 1934 solely to protect migratory raptors (Hawk Mountain Sanctuary 2008). Cherry Valley lies northeast of the Hawk Mountain Sanctuary. The 2006 "Conservation Plan for Kittatinny Ridge Conservation Corridor" (Audubon

Pennsylvania 2006) describes the value of the ridge in detail and includes protection of ridge habitat as a critical priority. The ridge serves as migration habitat for at least 16 species of North American raptors, including peregrine falcon, bald eagle, broad-winged hawk, Northern goshawk, and black vulture. There are 12 recognized hawk watching sites along the ridge.

The large blocks of unfragmented forest throughout the ridge also serve as key breeding sites for many interior-forest birds, including: ruffed grouse, wood thrush, ovenbird, scarlet tanager, cerulean warbler, worm-eating warbler, Louisiana waterthrush, Acadian flycatcher, and many others. Some of these are species of conservation concern that may be on the brink of being listed as threatened or endangered, or are on the National Audubon Society's National Bird Conservation WatchList (Butcher et al. 2007). In addition to interior forest songbirds, other species that use the Kittatinny Ridge Corridor for nesting that are on Audubon Pennsylvania's list of "Birds of Concern" include: American woodcock, great egret, bald eagle, red-headed woodpecker, and peregrine falcon. This habitat matrix supports a variety of other species of special concern, including the Pennsylvania threatened Allegheny woodrat and Eastern small-footed myotis (a bat). Black bear, bobcat, wild turkey, and ruffed grouse are found in healthy numbers, not to mention an abundance of white-tailed deer. This alternative could protect up to 12,400 acres of upland forest habitat, thus greatly enhancing the number of acres of forested ridge habitat already protected in the valley area.

Roughly 50 percent of the undeveloped areas in the Cherry Valley Study Area is forested, including forested wetlands; 2 percent is emergent and scrub-shrub wetlands; and another 40 percent is agricultural land consisting primarily of old fields, hay meadows, pasturelands, and croplands. The proposed refuge boundary identified in Alternative B provides a diverse mix of habitat types and as such provides habitat for numerous AMBCR and ACJV priority species as referenced in Appendix B (Table C-2) including:

- Emergent and Riparian Freshwater Wetlands (American black duck, wood duck, common and hooded mergansers, bald eagle, American bittern, etc.).
- Agricultural/Grassland (grasshopper sparrow, golden-winged warbler, bobolink, Eastern meadowlark, etc.)
- Shrub-Early Successional (golden-winged warbler, American woodcock, field sparrow, eastern towhee, willow flycatcher, brown thrasher, blue-winged warbler, prairie warbler, etc.)
- Deciduous Oak-Hickory and Riparian Forest (cerulean warbler, worm-eating warbler, wood thrush, Louisiana waterthrush, red-headed woodpecker, Eastern wood-pewee, scarlet tanager, Kentucky warbler, Northern oriole, etc.)
- Northern hardwood-mixed forest (eastern wood-pewee, wood thrush, Canada warbler, olive-sided flycatcher, Louisiana waterthrush, scarlet tanager, yellow throated vireo, etc.)

To the best of our knowledge, the majority of these species are well represented in the region. Indeed, Cherry Valley is recognized as a premiere birding location in the Northeast and is a destination site for birders, academic classes from local education institutions, and others.

The proposed refuge described in this alternative would hold an unique position of offering a mosaic of habitats that aid a large diversity of avian species. One of the greatest opportunities in this regard may be the presence of larger, non-forested tracts that could be managed for shrubland birds. Scrub-shrub habitat is a high priority in the Northern Ridge and Valley, primarily because it continues to support numerous breeding populations of golden-winged warblers, one of the highest priority bird species in the area (Appalachian Mountains Bird Conservation Partnership 2005). 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 due to the overall loss of early successional habitats.

The landscape composition around the proposed refuge also presents a great opportunity to make significant contributions to the conservation of grassland birds. Grasslands throughout the physiographic area are being significantly degraded by succession and through colonization of these areas by invasive plant species. The expansion of fast spreading invasive species such as multiflora rose and autumn olive into grassland habitats very quickly makes these habitats unsuitable for grassland bird species. A well planned and organized invasive species control program would be crucial to grassland management, as well as management of the other habitats at the proposed refuge.

Mature hardwood forest is the top conservation priority in the AMBCR. With much of the existing forestland in this physiographic area lying on ridges, bottomland forests are comparatively rare. Managing for forested bottomland corridors along the Cherry Creek and its tributaries would constitute a significant contribution to the overall goals for Area 17. Management of ridge and slope forested upland habitat and forested wetland habitats would support nesting interior-forest-dwelling birds of concern. Management of non-forested and forested wetland habitat would provide spring and fall migratory waterfowl and shorebird habitat. Extensive pockets of suitable waterfowl and shorebird habitat are present along the entire length of the Cherry Creek riparian corridor and elsewhere in Cherry Valley.

Endangered and Threatened Species

Bog turtle -- The Bog Turtle (*Clemmys muhlenbergii*) Recovery Plan (USFWS 2001) identifies eastern Pennsylvania as a stronghold of this federally-listed, threatened species. The area encompassed by Alternative B (see Figure 3-3 above) includes numerous documented bog turtle wetlands where the species is thriving, and other wetlands where turtles are present but the habitat is in need of restoration. A number of important partnerships between the Service's Partners for Fish and Wildlife program,

The Nature Conservancy, the Pocono Heritage Land Trust, private landowners, and others have resulted in the protection of some of these wetlands, as well as successful bog turtle habitat restoration projects throughout the valley. The proposed refuge described in Alternative B would continue and expand upon these partnerships and management opportunities.

Bog turtles live in spring-fed wetlands throughout Cherry Valley. The existing riparian corridor along Cherry Creek and its tributaries provides good habitat connectivity for this species as well as other species of concern. Although some of the wetlands are, in a sense, protected due to conservation-focused easements and ownerships, many such wetlands remain unprotected and are therefore in peril. An additional challenge is that springs that provide water to these wetland systems have their genesis on the ridge and mountain slopes that flank Cherry Valley to the north and south. Only a small amount of these forested slopes is protected. This is of great concern because development or other alterations here would jeopardize the hydrologic link that supports the valley wetlands and the unique assemblage of species that inhabit them. Alternative B would provide opportunities to protect the wetlands, slopes, and riparian corridor areas within the acquisition boundary.

Indiana Bat -- Indiana bats (*Myotis sodalis*) were present in the Cherry Valley region of eastern Pennsylvania based on historic records from Hartman's Cave. Currently, two bat hibernation sites are known within close proximity to Cherry Valley. They are located in historic mines at Hibernia and Mount Hope, New Jersey, approximately 35 miles away. A thriving summer population of Indiana bats is found at Great Swamp NWR, approximately 15 miles from these hibernation sites and about 65 miles from Cherry Valley. During the spring and summer, Indiana bats make their way to the Great Swamp NWR for foraging, birthing, and rearing of young. The habitat at the Great Swamp NWR that supports these activities consists of large dead snags and dying trees that lie within close proximity to open marshes and stream corridors. Proximity of the Cherry Valley region to the hibernation sites, the presence of high quality summer habitat consistent with that observed at the Great Swamp NWR, and the historical records of Indiana bats in Cherry Valley, all indicate there is a high likelihood that the species is present in the Study Area during the summer months. In addition, it is likely that wintering populations could be restored to the area if Hartman's Cave and other potential hibernation sites are protected from disturbance.

The best potential habitat for the Indiana bat in Cherry Valley, aside from the historical hibernation site at Hartman's Cave, would be late spring and summer foraging habitat in the riparian corridor of Cherry Creek (i.e., Central Appalachian Stream and Riparian ecosystem). Areas where this corridor coincides with large dead and dying snags (for roosting) and wooded and emergent wetlands (for foraging) would be the areas with the highest likelihood of occurrence. Survey work of the area would be merited to establish the current presence or absence of the species. Future management of the area to retain and restore appropriate habitat may serve to attract bats to the area and

expand upon current habitat use. Based on available information, protection and management of appropriate habitat in Cherry Valley has a high potential for aiding the recovery of this species. Surveys for Indiana bats would be a high priority if a refuge is established.

Other Federally-Listed, Threatened and Endangered Species and Federal Species of Concern -- Other species of concern that have been documented in the valley include the federally-listed, endangered northeastern bulrush, and a historical record of the federally-listed, threatened small-whorled pogonia (DCNR 2008). The northeastern bulrush became the second Pennsylvania plant to be federally listed as an endangered species. It is found in small wetlands, usually one acre or less, where the water level is high in spring and drops through the summer. At present, 26 populations are known in Pennsylvania, most have been discovered since the species was listed and brought to the attention of ecologists. Alternative B would allow the Service to provide habitat protection for the one known population of Northeastern bulrush in the Study Area. There is one historical record of small-whorled pogonia in Monroe County. It is thought that the specimen was observed near the Delaware Water Gap, but its exact location is unknown (S. Klugman, personal communication, 2 September 2008). In the Northeast, this orchid typically occurs in mid-successional, mixed deciduous and coniferous forest with gaps in the canopy. Typically soils are acidic sandy loam and topographic slope ranges from 8 to 15 percent, or at the base of steep slopes (Sperduto and Congalton 1996). Consequently, even though the species has not been recorded recently, protection of upland forests as described within this alternative may allow management for and protect of suitable habitat for this species.

Northeastern Bulrush

The American eel has been documented in Cherry Creek (Hartzler 2001, Fisher pers. comm.). The American eel is an interjurisdictional fish that breeds in saltwater and grows and matures in freshwater (i.e., it is catadromous). Because the species is thought to be in decline in some areas, a status review was initiated by the Service in 2004 to evaluate if ESA protection should be extended to the eel. The Service determined in 2007 that, although there was compelling evidence of eel decline in some areas, the overall population is not in danger of extinction nor is it likely to become so in the foreseeable future (USFWS 2007a). Regardless, nearly 335 acres of stream and riparian habitats described within Alternative B would be protected, and possibly enhanced, for the benefit of this and other stream-dependent species.

Cherry Creek also supports a population of eastern brook trout. In the U.S., eastern brook trout populations have declined across their range (Hudy et al. 2005). This

decline has been attributed to many causes, including increases in water temperatures, agriculture, urbanization, exotic fish species, and poor riparian habitat has the top reasons for this decline (Hudy et al. 2005). Within the Study Area, the most prominent reasons for decline of the species are thought to be high water temperature and urbanization (Hurdy et al. 2008). As part of the efforts of the EBTJV, Pennsylvania has identified several goals for this species, including conserving existing populations where they exist (EBTJV 2008). By protecting up to 335 acres of stream and riparian habitat, this alternative offers the best opportunity for conserving and improving the brook trout population in Cherry Creek, in concert with state and regional goals for this species.

Dwarf wedgemussel (an endangered species under the ESA), striped bass (interjurisdictional fish), and American shad (interjurisdictional fish) are documented nearby in the Delaware River. Although the dwarf wedgemussel has not been documented in the Study Area to date, it has been documented in the Delaware River upstream of Cherry Creek by the Pennsylvania Cooperative Fish and Wildlife Research Unit, thus providing an indication that recovery steps are possible within the proposed refuge boundary. Striped bass and American shad likely do not occur in Cherry Creek; however, the dwarf wedgemussel and these interjurisdictional fish species are aided by clean, unpolluted water coming from tributaries to the Delaware River. At a minimum, the Cherry Creek watershed provides a valuable ecological service in this regard.

State-Listed Species -- In Pennsylvania, three different agencies share responsibility for administering the state threatened and endangered species program as well as and other species of special concern. The Pennsylvania Fish and Boat Commission is responsible for fish, reptiles, amphibians, and other aquatic organisms. The Pennsylvania Game Commission is responsible for wild birds and mammals. The Department of Conservation and Natural Resources is responsible for native wild plants, terrestrial invertebrates, significant natural communities, and geologic features. In addition to their status as federally-listed, threatened or endangered species, the bog turtle, Indiana bat, and dwarf wedgemussel are identified in the Pennsylvania Wildlife Action Plan (WAP) as “Wildlife of Immediate Concern” (Pennsylvania Game Commission and Pennsylvania Fish and Boat Commission 2008). In addition, Alternative B is the only alternative that would afford protection of the Central Appalachian Floodplain Ecological System, possibly providing habitat for the state-listed, endangered sand cherry.

According to an inventory conducted by The Nature Conservancy and the Pennsylvania Natural Heritage Program, the Study Area supports up to 20 state-listed, endangered and up to 13 state-listed, threatened species (see Table 2-3, pg. 2-17 for the specific species). Alternative B offers a significant means of protecting a wide diversity of habitats that may help to promote the maintenance and potential recovery of these state-listed species.

Ecosystems of Concern

In addition to the individual species discussed above, Cherry Valley includes three ecosystems of conservation concern (Noss et al. 1995). Open Sedge Fens are located in the valley and are considered to be a National Critically Endangered Ecosystem. The Kittatinny Ridge mentioned above is considered to be a National Endangered Ecosystem, again highlighting its importance as a major migration corridor for birds of prey, waterfowl, and song birds. The Riparian Forest Ecosystem is considered to be a National Threatened Ecosystem, and in Cherry Valley provides habitat and habitat connectivity corridors for a great diversity of rare and common wildlife. All three of these ecosystems would be subject to protection within the refuge proposed under Alternative B. Two other imperiled ecosystems, Northern Appalachian Acidic Cliff and Acidic Shrub Swamp, are present in the valley within the proposed acquisition boundary for Alternative B and are designated as Pennsylvania Special Concern Ecosystems.

Contributions to National Habitat Initiatives

A refuge in Cherry Valley could 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. A refuge would help ensure that migratory bird habitat in the wetlands and uplands of Cherry Valley is protected in perpetuity. Many other birds of high conservation concern would benefit as well. Protection afforded to Cherry Valley on behalf of bog turtles and other species of federal concern would have the indirect effect of protecting habitat for numerous state-listed, threatened and endangered species as well as other species of concern.

<u>Promotes Biological Integrity and Diversity</u>

Various conservation groups, the Commonwealth of Pennsylvania, and the federal government have recognized the significance of wildlife habitats in Cherry Valley. With resources tight and evolving community recognition of open space and ecology, initiatives aimed at protecting the valley began to take form at the local government and private levels. Issues related to migratory birds, the federal ESA listing of the bog turtle, and water quality degradation, elevated to a national level the political and resource management understanding of the issues associated with a proposed Cherry Valley NWR. During this time, conservation partners have been working hard to protect the valley, its surrounding habitats, and associated species to the extent practicable. As development continues to dominate the landscape in Monroe County to the north and Northampton County to the south, the relatively unfragmented habitat in Cherry Valley stands in stark contrast. Because of this, Cherry Valley has become known as an important regional and national asset. Furthermore, management actions by the Service and others have resulted in habitat enhancements that support greater numbers of bog turtles and other species. Biological surveys conducted by the Service, The Nature Conservancy, and other conservation agencies and groups have documented more than 167 bird species, the location of various bog turtle populations and habitats,

and the potential presence of other species of concern. By creating a new refuge in Cherry Valley, the Service would contribute extensively to protecting the biological integrity and diversity of an important wildlife corridor in northeastern Pennsylvania.

Provides Habitat Connections

Refuge lands would provide a crucial link for migratory birds and crucial habitat for several species of concern. Our land management goals and objectives for a refuge would complement the management of adjacent and nearby conserved lands, both public and private, thus enhancing our wildlife management contribution to the regional landscape (Figure 3-3 above). Links to habitats owned and managed by the Commonwealth of Pennsylvania, The Nature Conservancy, and the Pocono Heritage Land Trust would also help to provide for a more contiguous and intact habitat complex within Cherry Valley. A refuge in Cherry Valley would provide local and regional benefits to wildlife by working in concert with existing conservation areas and partners, for example:

- Delaware Water Gap National Recreation Area and the Middle Delaware National Scenic River. Located just northeast and bordering the proposed refuge is the Delaware Water Gap National Recreation Area. The recreation area encompasses 67,000 acres of mountain ridge, forest, and floodplain on both sides of the Delaware River in the states of New Jersey and Pennsylvania. Forty miles of the Middle Delaware River are within the park, as well as trout streams, lakes, and ponds. The mission of these areas is to provide outdoor recreation opportunities while conserving the natural, cultural, and scenic resources of the recreation area. In so doing, the park works cooperatively with surrounding communities and the public to achieve the conservation goals of the Delaware River region.
- Appalachian Trail**.** Running the length of the proposed Cherry Valley NWR would be a key segment of the AT. The trail is a more than 2,175-mile long footpath stretching through 14 eastern states from Maine to Georgia, traversing the wild, scenic, wooded, pastoral, and culturally significant lands of the Appalachian Mountains (National Park Service, “Appalachian National Scenic Trail”). The AT is flanked on either side by buffer areas intended to maintain the wild character and scenery encountered along the length of the trail. Numerous partners in addition to the National Park Service hold title to these lands.
- Worthington State Forest. Just across the Delaware River is the nearly 6,600 acre Worthington State Forest, owned by the State of New Jersey. Although a bit more distant from Cherry Valley than the AT and Delaware Water Gap National Recreation Area, the forest continues a habitat block of protected lands that is associated with Cherry Valley by proximity, resource values, and habitats. The most mountainous terrain and scenic views of northern New Jersey are found in Worthington State Forest.
- Hawk Mountain Sanctuary. Located along the Appalachian Flyway to the west of the proposed Cherry Valley NWR, the 2,600 acre Hawk Mountain Sanctuary

offers visitors an outstanding, year-round, nature experience with its mountaintop vistas, eight miles of hiking trails, and thrilling autumnal raptor migration. Hawk Mountain Sanctuary is one of the best places in the northeastern U.S. to watch the annual hawk migration. On average 20,000 hawks, eagles, and falcons pass along the Kittatinny Ridge by the Sanctuary's North Lookout each year (Hawk Mountain Sanctuary 2008).

- The Nature Conservancy. The Nature Conservancy has been successful in protecting 1,000 acres through the purchase of land or conservation easements in Cherry Valley.
- Pocono Heritage Land Trust. The Pocono Heritage Land Trust is a locally-based conservation group dedicated to protecting important lands and waters, open space, agricultural landscapes, and the natural heritage of the Pocono Mountains region. It has been successful in protecting lands throughout the Pocono Region and currently owns one large tract of land in the Study Area. Cooperative agreements with The Nature Conservancy, the Service, and other conservation groups have resulted in habitat restoration work on this property.
- Pennsylvania Game Commission Game lands**.** The Pennsylvania Game Commission owns more than 1.4 million acres of State Game Lands and manages these lands for the benefit of wildlife and people. State Game Lands are public hunting grounds and lawful hunting and trapping are permitted during open seasons. The commission owns nearly 8,000 acres of mostly forested land in State Game Lands 168 (Northampton County) and State Game Lands 186 (Monroe County). These properties lie just to the west and north of the Study Area.
- County and Local Governments. Monroe County and other local governments, including Stroud Township, have been actively pursuing smart growth principles and protecting land and important landscape features and integrity in Cherry Valley. Although much of this effort in Monroe County has focused on concentrating development along established populations centers and existing highway arteries, along with the preservation of farmlands, woodlands, and open space, an indirect success has been the protection of important wildlife habitat within the valley (Bloss Associates 2001). Land protection within the valley has been promoted by a variety of measures including a $25 million Monroe County open space bond initiative that has been exhausted due to land protection demand.

Invasive Species Control

An inventory was conducted for Monroe County to help facilitate the preservation of native plants and control invasive species (The Nature Conservancy 1999). Alternative B would enable a partnership effort between the refuge and the Pennsylvania Bureau of Forestry to inventory and control invasive plants such as common reed, purple loosestrife, multi-flora rose, autumn olive, and Japanese knotweed.

Goal 2. Create opportunities for hunting, fishing, wildlife observation and photography, and environmental education and interpretation, while promoting activities that complement the purposes of the refuge and other protected lands in the region.

White tailed Deer

The Refuge Improvement Act establishes six priority public uses on refuges. Those priority uses depend on the presence, or the expectation of the presence, of wildlife. These uses are: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. Although these priority uses must receive our consideration in planning for public use, they also must be compatible with the purposes for which a refuge is established and the mission of the Refuge System. Compatibility determinations, which evaluate the effects of a particular use (or activity) in the context of species or habitats in a refuge, aid in making those decisions. If refuge lands are acquired in Cherry Valley, compatibility determinations would be used to decide what and where public use opportunities would be permitted.

Public use opportunities contribute to the long-term protection of wildlife resources by promoting understanding, appreciation, and support for wildlife conservation. The six priority public uses would be accommodated to the maximum extent possible, where they would not have significant negative effects on wildlife. Environmental education is addressed in more detail in Goal 3 (below). All of the proposed public use activities are contingent upon availability of staff and funding to develop and implement these programs. We would promote opportunities for volunteers and develop community appreciation and public support for the refuge. The Service would consider developing interpretive materials and programs to enhance the communities' awareness of and appreciation for valley wildlife resources. School and other group programs would be considered. We would open newly acquired lands for hunting and fishing if they can biologically, ecologically, and safely accommodate these activities within state regulations. Newly acquired lands that traditionally have been open to the public for hunting and fishing would remain open until we completed our planning process. Before closing any newly acquired lands, we would complete a separate public review process. If possible, we would provide an American with Disabilities Act (ADA)-compliant hunt, and we would consider a Youth Hunt.

If a refuge is established in Cherry Valley, an increase in public use would be expected from new trails, parking areas, fishing access, interpretive overlooks, and observation platforms that would potentially be a part of a new refuge. We would allow public access for day use on many of the newly acquired lands provided there are no expected negative effects on sensitive species (e.g., ESA-listed species) or habitats. Generally, we

would allow hunting, based on the Pennsylvania State hunting seasons and consistent with the refuge Annual Hunt Plan (once developed). We would allow fishing along Cherry Creek where accessible, and may be able to support fishing derbies for children. Working with state and local agencies, we would study the feasibility of converting existing historic logging roads into public use trails. A refuge also may provide interpretive and environmental education programs and increase partnership opportunities to interpret the cultural and natural resources within the refuge and the watershed.

This goal will enable the Service to help meet its proposed goal herein by supporting the efforts of the Appalachian Trail (AT) MEGA-Transect, designed to enhance management and protection of the AT environment (Dufour and Crisfields 2008). The AT and its surrounding 250,000 acres of protected lands are a priceless ecological resource, and with its extensive habitat areas, the AT offers new opportunities to work with the National Park Service and the Appalachian Trail Conservancy to promote conservation awareness of the AT and new refuge lands.

It is worth noting that the Delaware Water Gap National Recreation Area has ranked eighth or ninth in recreational visits amongst all National Park System properties for at least the last ten years (1998-2007) (National Park System, "NPS Stats, Ranking Report for Recreation Visits"). Much of this visitation is from the nearby, rapidly expanding New York/northern New Jersey and Philadelphia suburban areas. The draw of this recreation area would likely contribute to enthusiastic use of a new refuge.

Goal 3. Promote science, education, and research through partnerships to inform land management decisions and encourage continued responsible stewardship of the natural resources of Cherry Valley.

Alternative B would allow for extensive, refuge-related science, education, and research opportunities throughout the Study Area.

Partnerships

Working partnerships with surrounding landowners would be critical to successful refuge management. This document was developed cooperatively with our state fish and wildlife agency partners, and is supported by our land conservation partners working in eastern Pennsylvania. We will continue to cooperate with our conservation partners, all of whom are instrumental in helping us accomplish habitat management goals and objectives. The strength of potential partnerships is illustrated by the team that contributed to the development of this Final EA:

- U.S. Fish and Wildlife Service
- National Park Service (Delaware Water Gap National Recreation Area)
- Pennsylvania Natural Heritage Program
- Pennsylvania Game Commission

- Pennsylvania Fish and Boat Commission
- The Nature Conservancy
- Monroe County Conservation District
- Monroe County Planning Commission
- East Stroudsburg University
- Northampton County Community College
- Pocono Avian Research Center

Taken together, the respective missions of the preceding groups cover the protection of farmland, threatened and endangered species, scenic areas, grassland habitats, and open space that the local community has identified as significant. Based on this effort, Alternative B (preferred action) identifies over 20,400 acres within Cherry Valley that would preserve the areas most critical for maintaining the biological integrity, diversity and environmental health of the proposed refuge, and would provide habitat connectivity to other areas of protected land.

As noted in detail above, many of the organizations with whom we are collaborating have already protected key habitats in Cherry Valley and its environs and will continue to do so within the limits of their available resources. Should a Cherry Valley NWR become reality, there is a clear need for continued local and state support. We recognize our inability to solve the problems of habitat fragmentation and land protection on our own. Therefore, we would work to combine our efforts with those of our existing partners, as well as numerous other partners yet to be identified. With Alternative B the Service would be able to establish partnerships and cooperate in creating refuge opportunities and joint conservation initiatives in Hamilton, Ross, Chestnuthill, Smithfield, and Stroud townships, as well as Delaware Water Gap Borough. The Service would seek opportunities to work with local farmers and landowners to manage refuge lands in ways that benefit the goals and interests of the refuge and its neighbors. The Service would also seek opportunities to aid landowners with conservation projects on their own land. The Service and the Refuge System would work toward the biological, cultural, and public use goals that are outlined in Chapter 1 and Appendix B (Conceptual Management Plan) in this document. It is clear that partnerships with the public, landowners, neighbors, conservation organizations, and local, county, state, and other federal government agencies would be the only path to a successful Cherry Valley NWR.

Environmental Education

Environmental education, one of the six priority wildlife-dependent uses encouraged on refuge lands, incorporates on-site, offsite, and distance-learning materials, activities, programs, and products that address the audience's course of study, the mission of the Refuge System and the management purposes of the refuge. The goal of environmental education is to promote an awareness of the basic ecological foundations for the interrelationships between human activities and natural systems. Through curriculum-

based environmental education, both on- and off-refuge, refuge staff and partners hope to motivate students and other persons interested in learning the role of management in the maintenance of healthy ecosystems and conserving our fish and wildlife resources.

For years, Service refuges have been connecting children with the land and with the agency's conservation mission. It is now apparent that such connections are of immense importance. New information shows that instead of being outdoors enjoying self discovery of wild "things," most children spend their time indoors glued to television, video games, and even cell phones rather than experiencing nature. Author Richard Louv (2005), whose book *Last Child in the Woods: Saving Our Children from Nature Deficit Disorder* documents this trend. In his book, Louv argues that increased urbanization, parental anxiety, residential development restrictions, and structured play have kept children inside rather than out. This separation from the natural world can result in a host of physical and mental ailments, Louv warns, from childhood obesity to Attention Deficit Hyperactivity Disorder, and can erode future support for conservation. As the nation's primary conservation agency, the Service has a significant role in addressing this concern. We would also have a strong incentive to promote children in nature activities with the AT MEGA Transect and the Delaware Water Gap National Recreation Area, in addition to the strong effort already underway at the Monroe County Conservation District.

The Service would attempt to work with school districts and teachers to develop environmental education programs featuring unique species or communities at the refuge. We would work with our partners such as the Monroe County Conservation District and the Delaware Water Gap National Recreation Area to promote environmental education, thereby maximizing the use of resources and time commitments for each partner organization. And, we would consider the role of a refuge in other potential opportunities such as small habitat restoration projects, docent-led trail walks, birding festivals, guest lecturers, youth hunting and fishing efforts, and even simple monitoring of various forms of wildlife on and off the refuge.

Research

The Service would 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 would encourage and seek research projects that are relevant to approved refuge objectives and that clearly improve land management and promote adaptive management. Priority research addresses information that would enhance management of the Nation's biological resources, is

important to agencies of the Department of the Interior, the Service, the Refuge System, and state fish and game agencies, and that addresses important management issues or demonstrates techniques for the management of species or habitats.

Refuge staff would maintain a list of research needs that would be provided to prospective researchers or organizations upon request. Refuge support of research directly related to refuge objectives may take the form of funding, partnerships in grant applications, 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 refuges, present and future, are required to submit a detailed research proposal following Service policy in Refuge Manual chapter 4, section 6. Proposals would be prioritized based on need, benefit to the refuge, compatibility with refuge purposes and the Refuge System mission, and funding required. Any special use permits that may be issued must also identify a schedule for annual progress reports, on which the Service would base our decisions for continued research activities. We would ask our regional refuge biologists, other Service divisions, state agencies, and appropriate subject matter experts to review and comment on proposals.

The Service would 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.

Alternative B would embrace a science-based strategy of adaptive management to keep the management of the refuge relevant and current through scientific research and monitoring. We acknowledge that our information on species and ecosystems is incomplete, provisional, and subject to change as our knowledge base improves. Objectives and strategies must be adaptable in responding to new information and spatial and temporal changes. We would continually evaluate management actions, both formally and informally, through monitoring or research to reconsider whether their original assumptions and predictions are still valid. In that way, management becomes an active process of learning what works best. The refuge manager is responsible for changing management actions or objectives if they do not produce the desired conditions.

3.2.3 Alternative C – Wetlands and Ridge Forests

The “Wetlands and Ridge Forests” alternative would create an acquisition boundary of up to 14,124 acres within the 31,150 acre Study Area, containing portions of 12 of the valley and ridge’s defined ecosystems (Figure 3-3, Table 3-2). Protection of lands would be accomplished through fee title (about 65 percent of the acres) and conservation

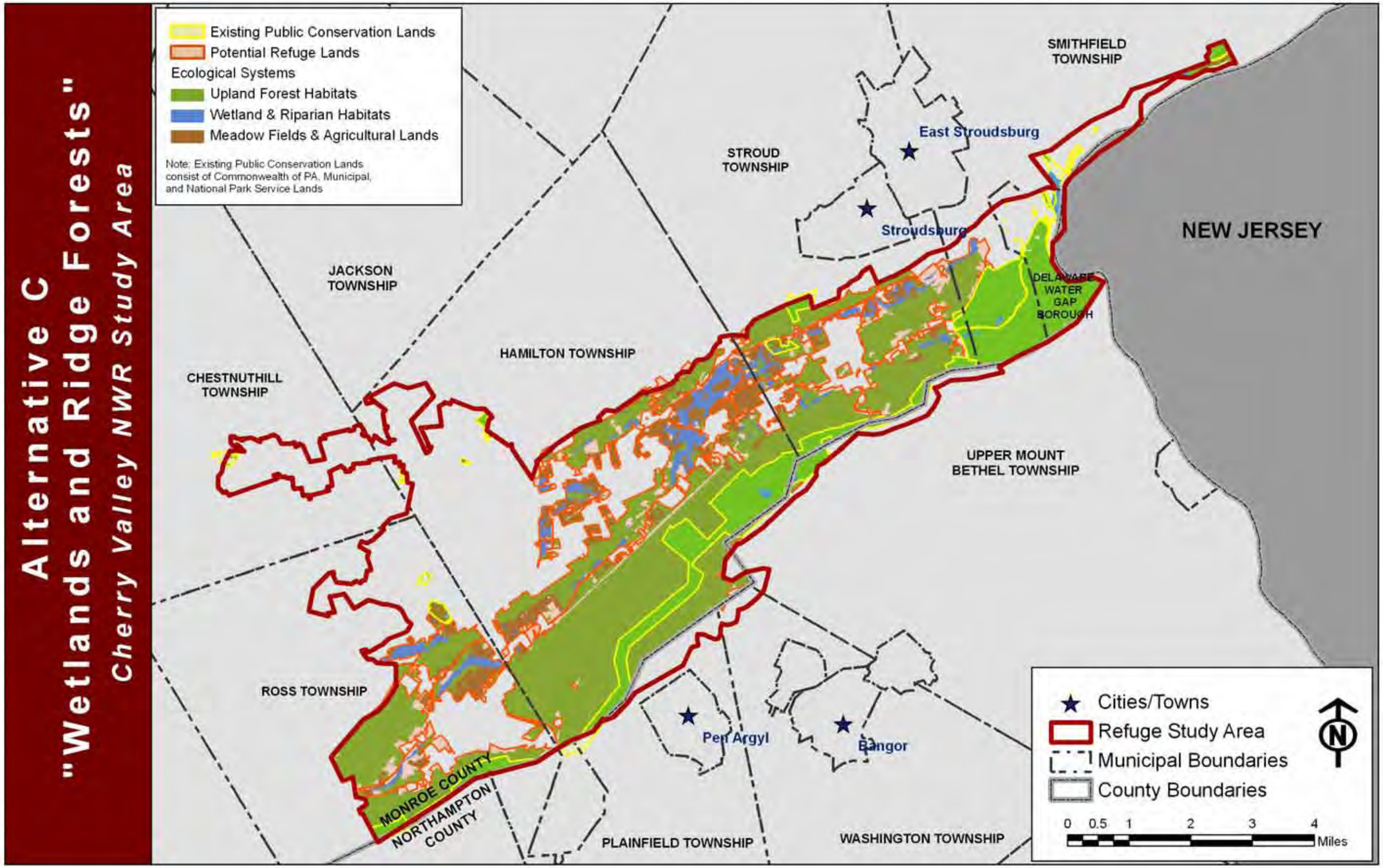


Figure 3-4. Map of ecological systems and habitats protected by Alternative C: Wetlands and Ridge Forests in the Cherry Valley National Wildlife Refuge Study Area, Pennsylvania.

easements (about 35 percent of the acres). Compared to the No Action Alternative, Alternative C would provide substantial protection or rare and unique habitats and species within the Study Area. It would also provide valuable opportunities for opportunities for wildlife-dependent recreation, new partnerships, and scientific research. However, the Service concludes that, compared to the preferred action (Alternative B), Alternative C would provide much lower levels of protection for the numerous wildlife species and habitats referenced in the Study Act. It would also provide fewer opportunities for wildlife-dependent recreation, new partnerships, and scientific research.

Table 3-3. Acres of identified ecological systems protected under Alternative C.

		Acres				
		Potential Refuge Lands				
	Ecological Systems	**No Current Protection**	**Agricultural Easements & Private Conservation**	**Totals**	**Municipal State & Federal**	**Grand Totals**
Upland Forest Habitats	Appalachian (Hemlock)-Northern Hardwood Forest	610.37	64.4	**674.77**	138.08	**812.85**
	Central Appalachian Dry Oak-Pine Forest	5623.00	41.78	**5,664.78**	2,635.55	**8,300.33**
	Central Appalachian Dry Oak-Pine Rocky Woodland	17.88	0.00	**17.88**	55.67	**73.55**
	Northeastern Interior Dry-Mesic Oak Forest	3344.22	209.67	**3,553.89**	1015.80	**4,569.69**
Wetlands & Riparian Habitats	Central Appalachian Floodplain	0.00	0.00	**0.00**	94.01	**94.01**
	Central Appalachian Stream and Riparian	90.95	63.49	**154.44**	5.39	**159.83**
	Laurentian-Acadian Freshwater Marsh	0.01	0.17	**0.18**	0.00	**0.18**
	Laurentian-Acadian Wet Meadow-Shrub Swamp	319.93	163.16	**483.09**	10.23	**493.32**
	North-Central Appalachian Acidic Swamp	176.79	0.72	**177.51**	30.38	**207.89**
	North-Central Appalachian Seepage Fen	13.70	0.00	**13.70**	0.00	**13.70**
	North-Central Interior Wet Flatwoods	76.25	37.75	**114.00**	0.00	**114.00**
	North-Central Interior and Appalachian Acidic Peatland	3.77	0	**3.77**	8.55	**12.32**
	North-Central Interior and Appalachian Rich Swamp	117.95	24.10	**142.05**	0.00	**142.05**
Ecological Systems Totals		**10,394.82**	**605.24**	**11,000.06**	**3,993.66**	**14,993.72**
Total Parcel Acres [1] ***(31,585.8 total boundary acres)***		**12,588.53**	**1,535.83**	**14,124.36**	**4,477.95**	**18,602.31**

[1] Property lines do not coincide with the Study Area boundary. Parcels have been divided to match the Study Area boundary as closely as possible, but total parcel acres exceeds the total Study Area because of rounding errors during parcel adjustments.

Goal 1 Protect and enhance habitats for federal trust species and species of management concern, with special emphasis on migratory birds and species listed under the ESA, along with protection of wetlands and the Kittatinny Ridge.

Of the 14,124 acres that could be acquired under Alternative C, over 9,900 acres of upland forests would be protected. This would generally include roughly 5,700 additional acres of Central Appalachian Dry Oak-Pine Forest and over 3,500 additional acres of Northeastern Interior Dry Mesic Oak Forest compared to the No Action alternative. These forests would serve as valuable habitat for birds that breed in interior forests already mentioned in Alternative B. As with Alternative B, over 1,000 additional acres of emergent, scrub-shrub, and forested wetlands could be protected, contributing to the conservation of foraging bats, wetland birds, waterfowl, shorebirds, bobolink, woodcock, turkey, Eastern meadowlark, bog turtles, wood turtles, diverse reptiles and amphibians, mink, river otter, and others. About 1,700 acres of agricultural lands could become available for protection and could contribute, if managed appropriately, to the conservation of declining grassland birds such as grasshopper sparrows, bobolink, and Eastern meadowlark. Compared to the preferred action (Alternative B), this is about half of the agricultural lands that could be protected, thus substantially decreasing our ability to manage habitat for rare grassland birds that require 50+ acre sites for nesting habitat.

Compared to Alternative A, Alternative C provides about 90 additional acres of riparian and stream habitat; however, this is only 34 percent of the additional acres that would be protected under Alternative B. Excluding this habitat would result in substantially decreased benefits to associated fishes (e.g., American eel), freshwater mussels, and other species. In addition to more common species, this habitat is used by numerous species of concern, for example: for dispersal (e.g., bog turtle), or feeding and roosting (e.g., likely Indiana bat).

Bald Eagle

Species priorities and management essentially would be identical to Alternative B, recognizing the diminished management ability for grassland birds. The decrease in protected riparian and stream habitats would decrease the benefit to all of the waterfowl and waterbirds discussed in Alternative B, as well as resident fishes, and other water-dependent species. Alternative C does encompass the large tracts of forested land along the Kittatinny Ridge, thus benefitting the nesting interior forest birds already mentioned and protecting this important migratory corridor for raptors and migratory neotropical birds. However, it does not provide he habitat connectivity available under Alternative B. Alternative C does not include the one known northeastern bulrush

population in the Study Area; therefore, this species would no longer directly benefit from the establishment of a refuge in Cherry Valley.

Goal 2. Create opportunities for hunting, fishing, wildlife observation and photography, and environmental education and interpretation, while promoting activities that complement the purposes of the refuge and other protected lands in the region.

As with Alternative B, there would likely be ample opportunities for the six wildlife-dependent recreational public uses with Alternative C (Environmental Education is covered in Goal 3.) However, because of the decreased land base in particular, this alternative would likely provide less opportunities for public uses. In particular, because this alternative could protect about half of the stream and riparian habitat of Alternative C, we would have fewer opportunities to facilitate fishing access. There would likely be less opportunity for wildlife interpretation, observation, and photography, and more limited trail establishment. Overall, this alternative has 6,300 fewer acres for these wildlife dependent recreational activities compared to Alternative B.

Goal 3. Promote science, education, and research through partnerships to inform land management decisions and encourage continued responsible stewardship of the natural resources of Cherry Valley.

Alternative C offers strong opportunities for refuge-related partnership and research opportunities. The decrease in land base compared to the preferred action (Alternative B) would mean that direct opportunities to partner with Chestnuthill Township would be limited since this township would not be included in proposed refuge lands. Opportunities to partner with Hamilton and Ross townships would also be affected since proposed refuge lands within these townships are substantially less compared to Alternative B. The decrease in proposed refuge lands would not affect partnership opportunities with the AT or Delaware Water Gap National Recreation Area, although opportunities for science cooperation and field research would be somewhat diminished compared to Alternative B. Opportunities for environmental education also would decrease due to less extensive habitats and fewer municipalities (e.g., no lands in Chestnuthill). Compared to Alternative A, however, this alternative presents a strong basis for all three of the elements within this goal.

3.3 Summary Tables for Alternatives

Table 3-4. Comparison of acres of protected habitat by habitat type for Alternatives A, B, and C as described in this Final EA.

		Alternative A - Acres				***Alternative B – Acres (Preferred action)***				***Alternative C – Acres***			
		Currently Protected				***Proposed Refuge Lands***				***Potential Refuge Lands***			
	Ecological Systems	**Agricultural Easements**	**Private Conservation**	**Municipal State & Federal**	**Totals**	**No Current Protection**	**Currently Protected[1]**	**Totals**	**Grand Totals[2]**	**No Current Protection**	**Currently Protected[1]**	**Totals**	**Grand Totals[2]**
Upland Forest Habitats	Appalachian (Hemlock)-Northern Hardwood Forest	8.30	64.40	138.08	**210.78**	930.06	72.70	**1,002.76**	**1,140.84**	610.37	64.40	**674.77**	**812.85**
	Central Appalachian Dry Oak-Pine Forest	134.62	47.11	2,635.55	**2,817.28**	7,365.41	181.73	**7,547.14**	**10,182.69**	5,623.00	41.78	**5,664.78**	**8,300.33**
	Central Appalachian Dry Oak-Pine Rocky Woodland	0.00	0.00	55.67	**55.67**	17.88	0.00	**17.88**	**73.55**	17.88	0.00	**17.88**	**73.55**
	Northeastern Interior Dry-Mesic Oak Forest	131.68	129.20	1,015.80	**1,276.68**	4,093.26	260.88	**4,354.14**	**5,369.94**	3,344.22	209.67	**3,553.89**	**4,569.69**
Wetlands & Riparian Habitats	Central Appalachian Floodplain	0.00	0.00	94.01	**94.01**	4.29	0.00	**4.29**	**98.30**	0.00	0.00	**0.00**	**94.01**
	Central Appalachian Stream and Riparian	43.70	29.32	5.39	**78.41**	261.97	73.02	**334.99**	**340.38**	90.95	63.49	**154.44**	**159.83**
	Laurentian-Acadian Freshwater Marsh	0.00	0.17	0.00	**0.17**	2.25	0.17	**2.42**	**2.42**	0.01	0.17	**0.18**	**0.18**
	Laurentian-Acadian Wet Meadow-Shrub Swamp	70.86	92.30	10.23	**173.39**	332.90	163.16	**496.06**	**506.29**	319.93	163.16	**483.09**	**493.32**
	North-Central Appalachian Acidic Swamp	4.13	0.00	30.38	**34.51**	275.39	4.13	**279.52**	**309.90**	176.79	0.72	**177.51**	**207.89**
	North-Central Appalachian Seepage Fen	0.00	0.00	0.00	**0.00**	13.70	0.00	**13.70**	**13.70**	13.70	0.00	**13.70**	**13.70**
	North-Central Interior Wet Flatwoods	10.87	26.88	0.00	**37.75**	76.25	37.75	**114.00**	**114.00**	76.25	37.75	**114.00**	**114.00**
	North-Central Interior and Appalachian Acidic Peatland	0.00	0.00	8.55	**8.55**	3.80	0.00	**3.80**	**12.35**	3.77	0.00	**3.77**	**12.32**
	North-Central Interior and Appalachian Rich Swamp	6.56	17.54	0.00	**24.10**	163.28	24.10	**187.38**	**187.38**	117.95	24.10	**142.05**	**142.05**
Totals		**410.72**	**406.92**	**3,993.66**	**4,811.30**	**13,540.44**	**817.64**	**14,358.08**	**18,351.74**	**10,394.82**	**605.24**	**11,000.06**	**14,993.72**
Total Parcel Acres (31,585.8 total boundary acres)		**1,046.97**	**787.73**	**4,477.95**	**6,312.65**	**18,630.85**	**1,834.70**	**20,465.55**	**24,943.50**	**12,588.53**	**1,535.83**	**14,124.36**	**18,602.31**

[1] Currently Protected consists of agricultural easements and private conservation that occur within the parcels (or portions of parcels) selected for this Alternative.

[2] Grand Totals consist of Potential Refuge Lands plus Municipal, State, and Federal lands that occur within the parcels (or portions of parcels) selected for this Alternative.

Table 3-5. Comparison of actions that distinguish the alternatives and their relationship to the potential goals and key issues for Alternatives A, B, and C evaluated in this Final EA to satisfy the requirements of NEPA and the Cherry Valley National Wildlife Refuge Study Act of 2006.

Goal 1. *Protect and enhance habitats for federal trust species and species of management concern, with special emphasis on migratory birds and species listed under the ESA, along with protection of wetlands and the Kittatinny Ridge.*

		Alternatives		
Habitat Types	**Types of Resources Affected**	**Alternative A - No Refuge**	**Alternative B - Diverse Habitat Complex (Preferred action)**	**Alternative C – Wetlands and Ridge Forests**
All	Total Acres of Protected Habitat	6,313	Up to 20,466	Up to 14,124
Emergent, Calcareous & Vernal Wetlands	Ecosystems and acres included:	Laurentian-Acadian Freshwater Marsh; North Central Appalachian Seepage. 0.17 acres	Same as Alternative A but allows protection of almost 16 total acres of this habitat, over 15 more acres compared to Alternative A and two additional acres compared to Alternative C.	Same as Alternative A, but allows protection of up to 13.88 total acres of this habitat
	Trust Species Likely to Benefit:	bog turtle; herons, woodcock, rails, waterfowl, snipe, bobolink, Eastern meadowlark, black duck, solitary sandpiper.	Same as A, but includes only known population of northeastern bulrush and substantial increase in protected acres provides additional benefits particularly to bog turtle and other trust species.	Similar to B, but does not include known population of northeastern bulrush and is 13 percent smaller than Alternative B.
	Species of Concern Likely to Benefit:	spotted turtles; numerous other amphibians and reptiles; highly diverse and rare plants.	Same as Alternative A but expanded because more habitat could be protected.	Similar to B, but benefits decrease commensurate with 13 percent decrease in protected area

Goal 1. *Protect and enhance habitats for federal trust species and species of management concern, with special emphasis on migratory birds and species listed under the ESA, along with protection of wetlands and the Kittatinny Ridge.*

Habitat Types	Types of Resources Affected	Alternatives		
		Alternative A - No Refuge	**Alternative B - Diverse Habitat Complex (Preferred action)**	**Alternative C – Wetlands and Ridge Forests**
Scrub-Shrub Wetlands	Ecosystems and acres included:	Laurentian-Acadian Wet Meadow & Shrub Swamp; North Central Interior & Appalachian Acidic Peatland. Approx. 182 acres.	Same as Alternative A but allows protection of up to 518.5 acres of this habitat, 336.5 more acres than Alternative A and 13 more acres than Alternative C.	Same as Alternative A, but allows protection of up to 505.5 acres of this habitat, 323.5 more acres than Alternative A but 13 less acres than Alternative B.
	Trust Species Likely to Benefit:	herons, woodcock, waterfowl, warblers; possibly golden-winged warbler, field sparrow, willow flycatcher, brown thrasher, blue-winged warbler	The same species as in A, but additional protected acres would provide additional benefits particularly to migratory birds.	The same species as in A and B. There would be substantial positive benefits compared to A because of the additional protected habitat. Benefits would be somewhat less than in B because fewer acres are protected.
	Species of Concern Likely to Benefit:	Rare plants such as swamp dog hobble, swamp sparrows, warblers, small mammals, and bats.	Same as Alternative A, but nearly three times more acres could be protected under this alternative, providing commensurate increases in benefits to these species.	The same species as in A and B. There would be substantial positive benefits compared to A because of the additional protected habitat. Benefits would be somewhat less than in B because fewer acres are protected.

Goal 1. *Protect and enhance habitats for federal trust species and species of management concern, with special emphasis on migratory birds and species listed under the ESA, along with protection of wetlands and the Kittatinny Ridge.*

Habitat Types	Types of Resources Affected	Alternatives		
		Alternative A - No Refuge	**Alternative B - Diverse Habitat Complex (Preferred action)**	**Alternative C – Wetlands and Ridge Forests**
Forested Wetlands	Ecosystems included:	North Central Appalachian Acidic Swamp; North Central Interior Wet Flatwoods; North Central Interior & Appalachian Rich Swamp; Central Appalachian River Floodplain; Central Appalachian Stream & Riparian. Approx. 269 acres.	Same as Alternative A but allows protection of up to 1050 acres of this habitat, 781 more acres than Alternative A and 332 more acres than Alternative C.	Same as Alternative A, but allows protection of up to 718 acres of this habitat, 449 more acres than Alternative A, but 332 fewer acres than Alternative B.
	Trust Species Likely to Benefit:	breeding neo-tropical migratory birds, cerulean warbler, worm-eating warbler, red-headed woodpecker, eastern wood pewee, Northern oriole, woodcock, bald eagles, Louisiana waterthrush, scarlet tanager, wood duck, herons, Canadian geese, warblers. American eel. May benefit bog turtles and Indiana bats.	Same as Alternative A, but additional protected acres would provide additional benefits particularly for migratory birds, American eel, and bog turtles in select areas. This transitional habitat to be maintained through appropriate forest management applications and control of invasive species.	Same as Alternatives A and B, but Alternative C would provide significantly less habitat protection than Alternatives B, with commensurate decreases in benefits particularly for migratory birds, the American eel, and bog turtles in select areas.

Goal 1. *Protect and enhance habitats for federal trust species and species of management concern, with special emphasis on migratory birds and species listed under the ESA, along with protection of wetlands and the Kittatinny Ridge.*

Habitat Types	Types of Resources Affected	Alternatives		
		Alternative A - No Refuge	**Alternative B - Diverse Habitat Complex (Preferred action)**	**Alternative C – Wetlands and Ridge Forests**
	Species of Concern Likely to Benefit:	Brook trout, wood turtles, possibly spotted turtles, mink, river otter, diverse plants including Hemlock parsley.	Same as Alternative A, but Alternative B would provide significantly more habitat protection than Alternatives A or C, with commensurate benefits for these species.	Same as Alternatives A and B, but Alternative C would provide significantly less habitat protection than Alternative B, with commensurate decreases in benefits to these species.
Forested Uplands	Ecosystems included:	Central Appalachian Pine-Oak Rocky Woodland; Central Appalachian Dry Oak-Pine; Northeastern Interior Dry-Mesic Oak; Appalachian Northern Hardwood; Northeastern Interior Dry Mesic Oak; Appalachian Northern Hardwood. Approx. 4,360.5 acres.	Same as Alternative A but allows protection of up to 16,767 acres of this habitat, 12,406.5 more acres than Alternative A and 3,010.5 more acres than Alternative C.	Same as Alternative A, but allows protection of up to 13,756.5 acres of this habitat, 9,396 more acres than Alternative A, but more than 3,000 fewer acres than Alternative B.
	Trust Species Likely to Benefit:	breeding neo-tropical migratory birds, possibly golden-winged warbler, black bear, deer, parula and black-throated green warblers	Same as Alternative A, but additional protected acres would provide additional benefits to migratory birds, large and small mammals, diverse reptiles and amphibians, common and rare plants. This climax habitat to be maintained through management applications.	Similar to Alternative B, but Alternative C would provide significantly less habitat protection than Alternative B, with commensurate decreases in benefits particularly for more common plants and animals.

Goal 1. *Protect and enhance habitats for federal trust species and species of management concern, with special emphasis on migratory birds and species listed under the ESA, along with protection of wetlands and the Kittatinny Ridge.*

		Alternatives		
Habitat Types	**Types of Resources Affected**	**Alternative A - No Refuge**	**Alternative B - Diverse Habitat Complex (Preferred action)**	**Alternative C – Wetlands and Ridge Forests**
	Species of Concern Likely to Benefit:	Timber rattlesnakes, Allegheny woodrat	Same as Alternative A, but additional protected acres would provide additional benefits to species.	Same as Alternatives A and B, but Alternative C would provide significantly less habitat protection than Alternative B, with commensurate decreases in benefits to these species.

Goal 2. *Create opportunities for hunting, fishing, wildlife observation and photography, and environmental interpretation, while promoting activities that complement the purposes of the refuge and other protected lands in the region.*

Refuge Use Opportunities	Alternatives		
	Alternative A - No Refuge	**Alternative B - Diverse Habitat Complex (Preferred action)**	**Alternative C - Wetlands & Ridge Forests**
Hunting and Fishing	Continue existing hunting and fishing opportunities under State regulation.	New public hunting and fishing opportunities would be possible, and would complement activities of the Pennsylvania Game Commission and Pennsylvania Fish and Boat Commission. Opportunities to assist in effective management of white tail deer. ADA and Youth events possible.	New public hunting and fishing opportunities would be possible compared to Alternative A, but fewer compared to Alternative B. Effort would complement activities of the Pennsylvania Game Commission and Pennsylvania Fish and Boat Commission. Opportunities to assist in effective management of white tail deer. ADA and Youth events possible.
Groups Addressed: Traditional hunters, particularly deer hunters and game bird hunters; recreational anglers for both warm water and cold water fisheries.			
Wildlife Observation, Intrepretation, and Photography	Continue current wildlife observation and interpretation activities through existing state and county programs (e.g., Monroe County Conservation District).	New opportunities for wildlife observation, interpretation, and photography are possible with protection of new lands that include many habitat types within the valley and throughout the municipalities within the Study Area.	Compared to Alternative A, more opportunities for wildlife observation, interpretation, and photography are possible with protection of lands that include many habitats in the area. These opportunities would be less than those offered in Alternative B, particularly in Chestnuthill, Ross, and Hamilton townships.
Groups Addressed: Students, wildlife enthusiasts, hikers, bird watchers, amateur and professional wildlife and nature photographers, botany enthusiasts, insect enthusiasts.			

Goal 2. *Create opportunities for hunting, fishing, wildlife observation and photography, and environmental interpretation, while promoting activities that complement the purposes of the refuge and other protected lands in the region.*

Refuge Use Opportunities	Alternatives		
	Alternative A - No Refuge	**Alternative B - Diverse Habitat Complex (Preferred action)**	**Alternative C - Wetlands & Ridge Forests**
Connection to public lands.	There would be no opportunity to seek mutual benefits of a refuge and the Appalachian Trail or other public lands.	New opportunities are possible to make a connection with a new, extensive refuge and the Appalachian Trail, Delaware Water Gap, and other public lands, due to the broad nature of the refuge embracing many habitat types.	Opportunities for connections to public lands are similar to those in Alternative B, particularly for the Appalachian Trail and Delaware Water Gap National Recreation Area.
Groups Addressed: Hikers, bird watchers, wildlife photographers, and others.			

Goal 3. *Promote science, education, and research through partnerships to inform land management decisions and encourage continued responsible stewardship of the natural resources of Cherry Valley.*

Partnership, Science, and Environmental Education Opportunities	**Alternatives**		
	Alternative A - No Refuge	**Alternative B - Diverse Habitat Complex (Preferred action)**	**Alternative C - Wetlands & Ridge Forests**
Partnerships	Activities of the Friends of Cherry Valley would continue but would be limited without the presence of a refuge.	Activities of the Friends of Cherry Valley could be expanded due to the presence of a refuge. We would be able to expand on the extensive partnerships that already exist as well as developing new partnerships throughout the area. Refuge staff would help to create new partnership efforts to improve a wide variety of activities beneficial to the natural resources of the Study Area.	Compared to Alternative A, activities of the Friends of Cherry Valley could be expanded due to the presence of a refuge. We would still be able to expand on the extensive partnerships that already exist as well as developing new partnerships throughout the area, but this would be reduced compared to Alternative B. Refuge staff would help to create new partnership efforts to improve a wide variety of activities beneficial to the natural resources of the area.
Scientific Research	No new research opportunities would exist. Efforts with East Stroudsburg University, Pennsylvania State University, Pennsylvania Cooperative Fish & Wildlife Research Unit, etc., would continue.	The Service would encourage and support research and management studies on refuge land that will improve scientific knowledge and contribute to natural resource management decision-making on the refuge. The refuge would also consider research for other purposes that contribute to the broader protection, use, preservation or management of native	The Service would encourage and support research and management studies on refuge land that will improve scientific knowledge and contribute to natural resource management decision-making on the refuge. The refuge would also consider research for other purposes that contribute to the broader protection, use, preservation or management of native

Goal 3. *Promote science, education, and research through partnerships to inform land management decisions and encourage continued responsible stewardship of the natural resources of Cherry Valley.*			
Partnership, Science, and Environmental Education Opportunities	**Alternatives**		
	Alternative A - No Refuge	**Alternative B - Diverse Habitat Complex (Preferred action)**	**Alternative C - Wetlands & Ridge Forests**
		populations of fish, wildlife, plants, and their natural diversity. Refuge lands would be subject to adaptive management through science applications.	populations of fish, wildlife, plants, and their natural diversity. These opportunities would be reduced compared to Alternative B. Refuge lands would be subject to adaptive management through science applications.
Environmental Education	There would be no opportunities for refuge-based environmental education. Current county efforts would continue.	New opportunities for environmental education and interpretation would be created due to the opening of extensive lands for public use, and the possibility of constructing facilities, trails, and programs for such purposes. New opportunities to promote "Children in Nature" activities.	New opportunities for environmental education and interpretation would be created due to the opening of some refuge lands for public use, and the possibility of constructing facilities, trails, and programs for such purposes. New opportunities to promote "Children in Nature" activities. These opportunities would be less than those offered in Alternative B, particularly in Chestnuthill, Ross, and Hamilton townships.

4 Environmental Effects

Chapter 2 "Affected Environment" discussed the status and condition of Cherry Valley in terms of its physical (air, water, soil, and sound), biological (habitats and species), and socioeconomic (public use, land use, tax revenue, and cultural and historic resources) environment, providing essential background status and trends information for assessing potential effects on that environment due to the establishment of a refuge in the valley. Chapter 3 presented alternatives to establishing a refuge and a number of management activities that may occur within each alternative. This chapter describes the foreseeable environmental effects (also called impacts, results, or consequences) to the Study Area from implementing any of the three refuge alternatives described in Chapter 3. For quick reference, we created a table (Table 4-3) at the end of the chapter to compare and summarize the effects we predict for each alternative.

A comparison of potential effects from each alternative provides the Service and the public with important information about what may be the best way to protect valuable wildlife resources within Cherry Valley, yet remain sensitive and knowledgeable about what those land protection measures, and subsequent management activities, may effect in the valley. In this chapter, effects are considered in relation to the issues described in Chapter 1, "Study Purpose and Planning Considerations," and are addressed within three basic themes: physical, biological, and socioeconomic. Conclusions and discussions on effects are determined from published literature or other available information. In the absence of published and available information, we base our comparisons on our professional judgment and experience, and the professional judgment and experience of recognized experts. For details of the alternatives for establishing a refuge, see Chapter 3, "Alternatives." For details of the physical, biological, and human environment of the Study Area, see Chapter 2, "Affected Environment."

When discussing effects we express them as "positive," "negative," or "no effect." A positive effect would benefit or enhance the fish and wildlife resources, or physical or socioeconomic environment under consideration and help accomplish Study Act and proposed refuge goals. A negative effect arises from an action that we predict would be detrimental to the valley's natural resources, physical attributes, or socioeconomic environment, and that may impede our ability to achieve the intent of the Study Act and proposed refuge goals. No effect means no recognized or discernible effect, either positive or negative. In addition, effects are discussed whether they are direct, indirect, or cumulative, and whether they are short-term or long-term.

As required by the Council on Environmental Quality (CEQ) and Service regulations implementing NEPA (Chapter 516 of the Departmental of Interior Manual), we assessed the importance of the effects of our alternatives based on their *context* and *intensity*. Their context ranges from site-specific to broad regional effects (Table 4-1). Although

any proposed refuge would compose a small percentage of the context within the large regional ecosystems around it, we developed the alternatives in relation to how they may contribute to achieving fish and wildlife conservation in Study Area. Context also addresses regional effects related to the socioeconomic and physical environment. We evaluated the intensity of effects based on the expected degree or percentage of natural resource, physical, or socioeconomic change from current conditions, and whether it is positive, negative, or neutral.

Table 4-1. Context considerations for the proposed Cherry Valley National Wildlife Refuge, Monroe County, Pennsylvania.

Region or Locale	Acres
Northern Appalachian Ridge & Valley Province	11.4 million acres
Appalachian Mountain Bird Conservation Region	100 million acres
Delaware River Watershed	8.66 million acres
Cherry Valley Study Area (CVSA)	31,500 acres
CVSA Ecosystems	20,550 acres
CVSA Developed Lands	6,130 acres
CVSA Agricultural Lands	3,860 acres
CVSA Open Space & Recreational Lands	35 acres
CVSA Public Lands	4,480 acres

The refuge alternatives and associated activities described in this document are consistent with the mission of the Service, the mission of the Refuge System, and their respective policies and directives. They are also consistent with the international, national, state, regional, and local plans or initiatives identified in Chapter 1. At varying levels, each alternative would contribute neutrally or positively to larger, landscape-scale conservation. Finally, this chapter identifies any permanent commitment of resources and the relationship between short-term uses of the environment and its long-term productivity.

4.1 Effects on the Physical Environment

4.1.1 Effects on Air Quality

Monroe County is included in the Wilkes-Barre/Scranton, Pennsylvania airshed. Monroe County meets or is marginal for all regulated air pollutants including ozone, carbon monoxide, nitrogen diozide, sulfur dioxide, particulate matter and lead (DEP 2008). Two adjacent counties, however, are in non-attainment status including Northampton County, Pennsylvania for 2.5 particulates and Warren County, New Jersey for sulfur dioxide (EPA 2008). No major stationary or mobile sources of air pollutants are present within the proposed refuge boundary. None of the alternatives as defined herein would result in air quality exceeding EPA air quality criteria; all three would comply with the Clean Air Act. Wildfires are not a substantial concern in the region because they occur infrequently, and the rapid local response quickly limits their extent.

Alternative A -- No Refuge

In considering Alternative A, the No Refuge alternative, we have determined that there will be as yet unquantifiable negative effects from increases in the degradation of air quality in general in Monroe County and the region because of the continuing development. Although building and residential development has declined since 2005, development continues. That development brings with it pollution due to long term increases in traffic, industrial discharge, and construction-related emissions. The same values that have shaped the landscape over the years also frame concerns related to the loss of agricultural land and open space to development, clean air and water quality, litter, wetland destruction, and increased traffic (BLOSS Associates 2004). Not having a refuge in the valley will simply mean that current land protection measures will have to be relied upon to protect open space and wildlife habitats to help mitigate the effects of an increasing population and development pressure on air quality.

Alternative B -- Diverse Habitat Complex

The most positive effect of establishing a refuge would be the natural role an intact vegetated environment serves in processing carbon dioxide and oxygen, and purifying air. Trees and other plants absorb and use carbon during photosynthesis, to build plant tissue while releasing oxygen in that metabolic process. Thus, through photosynthesis process, trees and other plants naturally remove excess carbon from the air, often expressed as carbon sequestration. According to Vicki Wolf (2004) in her article "Trees: A resource we can't afford to waste," one acre of trees provides enough oxygen for 18 people and absorbs as much carbon dioxide as a car produces in 26,000 miles. Additionally, during photosynthesis, other airborne chemicals are removed from the atmosphere such as nitrogen oxides, benzene, formaldehyde, airborne ammonia, some sulfur dioxide, and ozone, that are part of smog and greenhouse effect problems. Trees are natural filters that can significantly improve air quality by collecting dust and other impurities which are later washed to the ground during a rainstorm. Exposure to air pollutants, including ozone, toxins, and particulate matter, is associated with respiratory disease, asthma, heart disease, and other illnesses. Car and industrial fumes and odors often can be processed and neutralized by trees, or masked by the more-pleasing smells of blooming trees or shrubs and conifer forests. "Rapid urbanization during the past 50 years has been associated with increases in downtown temperatures of nearly 1° F per decade – largely caused by the increase in exposed heat absorbing surfaces, such as dark rooftops, parking lots, and streets" (Local Government Commission, "Livable Communities and Urban Forests" fact sheet, pg 2). Consequently, trees and other plants directly contribute to maintaining the air quality of Monroe County and the surrounding region. Managing habitats through restoration measures and potential silvicultural practices could keep the vegetated landscape actively growing, thus contributing to carbon sequestration.

By creating a refuge, another significant positive effect would be the protection of this area from development which has inherent liabilities regarding air quality. Development activities often remove vegetation and its air purifying functions, while creating air pollution through heavy equipment and construction activities (road, sewage, electrical, and building construction). Once developments are in place, traffic increases with associated increases in air pollution. Industrial pollution may occur depending on the character of the development. Hard surface environments adsorb heat, causing ambient temperatures to increase.

The potential negative air quality effects of a Cherry Valley NWR could include standard management activities such as setting prescribed fires to manage grasslands, applying herbicides to control invasive plants, blowing dust from construction sites, roads, and trails, and emissions from vehicles and equipment. These are manageable activities and measures can be taken to assure minimal effects. The Service limits the uses of the refuge to compatible, wildlife-oriented, consumptive and non-consumptive uses, and thus, curtails anthropogenic sources of emissions by maintaining forested and non-forested wetlands, grasslands, and early successional sites in natural vegetative cover. Trail maintenance and parking lot construction would cause negligible short term, localized effects from dust and vehicle and equipment exhausts. Operating the refuge facilities would continue to contribute slightly in local stationary source emissions. Therefore, in analyzing the effects on air quality, we considered only how Service actions at the refuge might affect criteria air pollutants, visibility, and global warming to a minimal degree, focusing instead on the potential for localized air quality impacts or improvement. None of the potential activities described in the Conceptual Management Plan (Appendix B) would affect visibility due to emission haze.

In the future, positive effects on air quality could occur by restoring developed areas that are no longer needed for refuge administration or programs to natural conditions, thus eliminating these locations as potential air emission sources and improving air quality by increasing the amount of vegetated area. To offset energy use at an established refuge that would be expected to have buildings and associated facilities, the Service would adopt energy efficient practices to reduce the refuge's contribution to emissions.

Projected annual refuge use levels are impossible to project at this time; however, we predict some increase in vehicle emissions on and near the refuge in the long term. The contribution to cumulative local and regional air quality effects would likely be compensated for to a large degree by precluding development in the refuge area. There would be virtually no localized increases on the refuge, compared to the current off-refuge contributions to pollutant levels and likely increases in air emissions from land development in the valley during the foreseeable future. The benefits of maintaining the refuge in natural vegetation would more than offset the predicted increase in vehicle emissions associated with creating a refuge. Consequently, we conclude that

the emissions from sources on the refuge would not cause cumulative effects on air quality.

Alternative C – Wetlands & Ridge Forests

The effects of Alternative C on air quality would be largely positive, and would contribute all of the benefits as described in Alternative B. The benefits derived from this alternative would be somewhat less since the size of this refuge would be 14,124 acres instead of 20,466 acres. In a similar fashion, the negative effects would be essentially identical to Alternative B but of a slightly lesser degree due to the smaller potential size of this alternative.

4.1.2 Effects on Water Quality

Cherry Creek is a second-order stream contained within a 13,343 acre watershed (of which 12,958 acres are within the Study Area). It benefits from numerous tributaries erupting from limestone aquifers, which account for most of the available water in the valley (BLOSS Associates 2004). Because of the limestone formations, Cherry Creek has a higher pH, alkalinity, and total dissolved solids than is found in most area streams, which are generally acidic and have a low mineral content. While water chemistry is different that other area streams, water quality throughout the Cherry Creek watershed is generally excellent (Brodhead Watershed Association 2008). Monitoring sites on Cherry Creek are tested each month as part of the Cherry Creek Streamwatch Program, which reports unusual results to Department of Environmental Protection for follow-up and action.

Alternative A -- No Refuge

While water quality scoring for repeat sites through 2003 by the Cherry Creek Streamwatch Program have displayed an upward trend, strong growth pressures in the region and sprawl development patterns could have negative effects on both the quality and quantity of the watershed's surface and groundwater. Rooftops, increasing traffic, parking lots and streets are slowly replacing forests and fields. Rain and snowmelt run rapidly off these impermeable surfaces instead of soaking into the ground. This storm water runoff carries sediment and petroleum-based pollutants into streams, accelerates steam-bank erosion and in-stream turbidity, and raises stream temperatures (BLOSS Associates 2004). These effects can have a direct effect on aquatic life in streams, including submerged aquatic vegetation, fish, and invertebrates. The No Refuge alternative would result in the reliance on existing land protection and water quality control measures to help safeguard surface and ground water quality in the valley.

Alternative B -- Diverse Habitat Complex

By establishing a refuge up to 20,466 acres, we would provide substantial additional watershed benefits by limiting land clearing and development, non-point sources of sediment-laden pollution and petroleum-hydrocarbon pollution, and detrimental changes in local hydrology due to increases in impervious surfaces that might otherwise affect valley areas from development. Establishing a refuge under this alternative would enable the protection of emergent, shrub, and forested wetlands, creek and river segments, ponds, vernal pools, and extensive upland forests. Retaining these habitats would enable them to continue their ecological functions for dispersing flood waters along bottomlands and adsorbing precipitation, facilitating a more natural snow melt and surface flow runoff, promoting groundwater recharge, and purifing water through soil and bedrock percolation. Management of selected agricultural lands as grasslands could reduce or even eliminate the use of herbicides and pesticides. Having refuge lands would promote improved water quality monitoring for early problem identification, and could improve cooperation of other landowners in the watershed to influence water quality.

If a refuge were established, we would take a number of steps to insure that we have sufficient scientific data to support management decisions regarding refuge hydrology and water quality. We would work with State agencies and other conservation partners to identify sources of point and non-point sediment and nutrient loading (e.g. septic systems, erosion, etc) impacting refuge wetlands, and associated lakes and rivers, and address these sources where possible. We would closely monitor and mitigate all of our routine activities that have some potential to result in chemical contamination of water directly through leakage or spills or indirectly through soil runoff. These include control of weeds and insects around structures, use of salts and chemicals for de-icing roads and walkways, and use of soaps and detergents for cleaning vehicles and equipment. All staff would be trained in spill prevention and spill response, and all appropriate steps and training would be conducted to assure the effective control of invasive plants using herbicides.

The Service limits the uses of the refuge to compatible, wildlife-oriented, consumptive and non-consumptive uses, and thus, curtails anthropogenic sources of water-borne pollutants by maintaining forested and non-forested wetlands, grasslands, and early successional sites in natural vegetative cover. Currently there is no reliable way to estimate potential visitor use and effects on natural resources and water quality due to potential future use. We expect use would include walking trails and related “non-motorized” activities. These activities tend to be of minimal damage to a landscape unless use occurs in steep, highly erodible areas., which is avoided. In analyzing the effects of public use on water quality, we principally considered how Service actions at the refuge might affect criteria water pollutants locally, which will enable an ability to determine any effects on regional water quality conditions.

Alternative C -- Wetlands & Ridge Forests

The effects of Alternative C on water quality would be largely positive, and would contribute all of the benefits as described in Alternative B. The benefits derived from this alternative would be smaller since the size of this refuge would be 14,124 acres instead of 20,466 acres. In a similar fashion, the negative effects would be essentially identical to Alternative B but of a slightly lesser degree due to the larger proposed size of this alternative.

4.1.3 Effects on Soils

Soils are the structural matrix and nutrient source for plant productivity and must be protected to sustain the variety of wetland, riparian, and upland habitats that would meet our habitat and species management goals. Most of the soil types within the Study Area were formed from glacial till, outwash, and alluvium, and tend to erode easily. Overall, however, the soils within the Study Area are productive and in good condition, with no substantive erosion, compaction, or contamination problems. In certain areas such as Kittatinny ridge cliffs, soils are absent or patchy, thin, and susceptible to disturbance so we would manage these areas to limit any human disturbance. We evaluated and compared the management actions suggested for each alternative on the basis of their potential to benefit or adversely affect upland soils and soils of the refuge's floodplains and riparian areas. Impacts of the alternatives to wetland soils are discussed in the wetlands section.

Alternative A -- No Refuge

Alternative A is the least desirable alternative in terms of potential benefits from acquisition and conservation of lands and the potential for habitat protection and soil preservation. Although the rate of development in the Study Area has declined since 2005, it continues nevertheless and the Service would not be able to contribute to measures that maintain and protect soils. There would be no opportunity for the Service to protect or restore roads, trails, or other existing sites within the proposed acquisition boundary, thus soil impacts from development or unmanaged use of those lands would continue and likely would increase over the long term.

Alternative B -- Diverse Habitat Complex

Alternative B would provide positive effects compared to Alternative A since creation of a Cherry Valley NWR would reduce the potential for large-scale development and related human disturbance on these lands and would reduce the long term potential for the resulting soil impacts. Maintaining and improving extensive habitat areas for fish and wildlife would help protect and retain healthy soils. It is unlikely that any significant forest management operations or extensive land alterations would occur on refuge

lands. However, restoration of roads and trails and fire suppression practices on refuge lands would help reduce soil erosion from such disturbed sites.

The potential adverse soil effects of activities described in the Conceptual Management Plan (Appendix B) that were evaluated include impacts from construction of buildings, parking facilities, access roads, and interpretive trails forest management activities (e.g., tree-cutting and use of roads for focal species management), hiking, and other refuge visitor activities. We would use best management practices in all management activities that might affect refuge soils to ensure that we maintain soil productivity. At times, the Service may acquire interests in properties with developments (e.g., houses or other structures) that are not needed for refuge purposes. When feasible, these properties would be restored to natural topography and hydrologic conditions and returned to native vegetation. In general, existing main access roads would remain open to provide motorized and non-motorized access for approved activities. Other designated motorized access may be developed but cannot be defined at this time. Off-road vehicles, such as motorbikes and ATVs, likely would not be allowed on the refuge since these vehicles can cause serious soil disturbance, compaction, and erosion. Deteriorating forest roads can also be a site of such soil impacts, and these would be eliminated or improved as appropriate.

Creation of a Cherry Valley NWR would stimulate visitor use of refuge lands. The Service limits the uses of the refuge to compatible, wildlife-oriented, consumptive and non-consumptive uses, and thus, curtails anthropogenic sources of soil disruption and erosion by maintaining forested and nonforested wetlands, grasslands, and early successional sites in natural vegetative cover. Currently there is no reliable way to estimate potential visitor use and effects on natural resources and soils due to potential future use. We expect use would include walking trails and related “non-motorized” activities. These activities tend to be of minimal damage to a landscape unless use occurs in steep, highly erodible areas, which is avoided. In some cases, for example, protective boardwalks and topographically sensitive trails are used to minimize soil disturbance. The potential negative soil effects of the activities described in the Conceptual Management Plan (Appendix B) could include: burning prescribed fires, grazing to maintain bog turtle sites and grassland, constructing parking facilities, access roads, and interpretive trails, and providing visitor activities and hunt programs. In analyzing the effects of public use on soils, we principally considered how Service actions at the refuge might affect soils locally, which will enable us to determine any effects on regional basis if necessary.

Alternative C -- Wetlands & Ridge Forests

The effects of Alternative C on soils would be largely positive, and would contribute mostof the benefits as described in Alternative B. The benefits derived from this alternative would be reduced since the size of this refuge would be substantially smaller (up to 14,124 acres instead of up to 20,466 acres). In a similar fashion, the negative

effects would be minimal, and would be essentially identical to Alternative B but of a slightly lesser degree due to the smaller size of the potential refuge in this alternative.

4.2 Effects on the Biological Environment

4.2.1 Effects on Habitats and Ecosystems

In 2008, the Pennsylvania Natural Heritage Program identified and mapped 13 ecological system types (Table 2-2) totaling 20,548 acres within the Cherry Valley National Wildlife Refuge Study Area (WPC 2008). The ecological systems cover about 65 percent of the Study Area and are located within a mosaic of forest, wetlands, agriculture (active and abandoned fields), quarries, villages and housing developments (Figure 2-4). For convenience, these ecosystems are discussed in three broad habitat categories: wetland and riparian, forested uplands, and agricultural lands and grasslands. Within the Study Area there are 1,746 acres of wetlands and riparian areas, 18,800 acres of upland forest, and 3,864 acres of agricultural lands and grasslands. Of these, 6,313 acres are currently protected with the remaining acres subject to potential development and potential degradation. A summary of acres within each of the three broad habitat types by alternative is presented in Table 4-2.

Table 4-2. Summary of Broad Habitat Types Protected by each Alternative for establishing a Cherry Valley National Wildlife Refuge, Monroe County, Pennsylvania.

Broad Habitat Type	Alternative A No Refuge	Alternative B Diverse Habitat Complex	Alternative C Wetlands and Ridge Forests
Wetlands and Riparian	451 acres	1,436 acres	1,089 acres
Forested Uplands	4,360 acres	12,922 acres	9,911 acres
Agricultural Lands and Grasslands[1]	868 acres	3,425 acres	1,713 acres
Total Acres[2]	5,679 acres	17,783 acres	12,713 acres

[1] Some agricultural easements are classified as forests, wetlands, or riparian habitat and are included in those habitat categories.

[2] Total acres only includes the acres of habitat that are part of the 13 ecological systems identified and mapped by the Pennsylvania Natural Heritage Program (WPC 2008). It does not reflect the total proposed acres under each Alternative. See text for additional details.

Alternative A -- No Refuge

Currently 450 wetland acres, over 4,300 acres of upland forests, and 1,500 acres of agricultural lands and grasslands are protected in the valley. As discussed in Chapter 2 (Affected Environment) and Chapter 3 (Alternatives), these ecosystems provide habitat for a broad array of federal trust species and state species of importance, representing a major component of the Study Area's biodiversity and providing an intact environment for Cherry Creek. These habitats help protect the creek from the effects of nearby

human activities and development. Some of the prominent wetland areas already protected include emergent wetlands and riparian areas along Cherry Creek conserved by The Nature Conservancy and the Pocono Heritage Land Trust. Expansive forest tracts already protected include lands along the top of Kittatinny Ridge managed by the National Park Service and the Pennsylvania Game Commission, and agricultural lands and grasslands protected under Pennsylvania's agricultural easement program are scattered across the valley.

The No Refuge alternative would likely present long term and cumulative negative effects since it would not provide any of the additional and needed protection measures for the valuable inter-montane wetlands, Kittatinny Ridge forests, and grasslands in the valley. Lack of strengthened protection measures would impede abilities to enhance habitat for federal trust species (e.g., bog turtle) and associated plants and animals. Continued development could lead to siltation and other forms of non-point source pollution, and also exacerbate the chronic struggle to prevent habitat fragmentation and its known negative effects on many species of wildlife and plants. Continued development invites the spread of invasive species, widely recognized as pioneer species that quickly establish in disturbed landscapes. Land and habitat protection efforts and programs noted in earlier chapters would continue to be the basis of protecting these areas, and conclusions have been reached already that these measures are inadequate. As noted earlier, the rate of development in Monroe County has declined somewhat since 2005. However, development pressure still exists and without further guarantees for protecting the wildlife habitat values in the valley, the development pressures in the valley could just as easily increase at some point in the future thereby jeopardizing or displacing these essential habitat areas.

Alternative B -- Diverse Habitat Complex

With Alternative B, the Service would potentially protect through conservation easement or fee title up to 20,466 acres of wetland , forested upland, and agricultural/grassland habitats, an additional 6,342 acres compared to Alternative C (Table 3-2). We conclude that establishing the refuge to embrace these habitats would be a major positive effect for Cherry Valley. This alternative would enable protection of over 1,400 wetland acres, 12,900 upland forest acres, and 3,400 acres of agricultural and grasslands (Table 4-2).

One of the primary benefits of Alternative B is the protection of various aquatic resources in the valley. The amount of protected wetlands and streams is more than triple the No Action alternative (Table 4-2). The extremely diverse wetlands and calcareous fens are of singular importance because their continuous groundwater seepage and open vegetation create habitat suitable for the threatened bog turtle as well as supporting an assemblage of plant species unique to this wetland type. Protecting additional riparian and creek habitat would benefit other aquatic resources as well including native brook trout, American eel, and possibly dwarf wedgemussel.

This area within Cherry Valley contains one significant cave, known as Hartman's Cave, which has been listed as a "special concern" bat hibernaculum by the Pennsylvania Game Commission because at least five species of bats have been known to use the cave (WPC 2008). Emergent wetlands provide spring and fall migratory waterfowl and shorebird habitat, and foraging bats and wintering raptor foraging habitat. Upland forests would serve as breeding, foraging, migratory, and wintering habitat for a host of neo-tropical migratory birds and resident gamebirds. Maintenance of existing grasslands and conversion of select agricultural lands to grassland habitat would benefit bobolink, meadowlark, grasshopper sparrow, and other grassland birds suffering from habitat loss. Further details on habitat benefits for trust species and species of concern offered by this alternative are presented in Chapter 3 -- Alternatives B, and Chapter 2 -- Affected Environment.

This alternative would almost certainly present long term and cumulative positive effects since it would provide additional and needed protection measures for the valuable inter-montane wetlands, Kittatinny Ridge forests, and grasslands in the Study Area. Having the ability to protect lands and habitats within a refuge would greatly strengthen protection measures, thereby enhancing abilities to improve habitat for bog turtle and associated wetland plants and animals. Buffering these sensitive habitats from development while maintaining the current vegetation cover, would impede siltation and other forms of non-point source pollution, and it would directly mitigate the threat of habitat fragmentation and its known negative effects on many species of wildlife and plants. Curtailed development provides a natural barrier to the spread of invasive species, thus preventing these pioneer species from quickly establishing stable and expanding populations in disturbed landscapes. Refuge land protection in concert with existing land and habitat protection efforts and programs noted in earlier chapters would represent a much stronger "tool box" of protection mechanisms to better guarantee the integrity of the Study Area's natural and rural character. Management of new refuge habitats would conserve the values discussed above, through habitat improvements and progressive acquisition and protection of additional habitat areas.

We believe habitat management activities conducted by the Service, although not yet well defined, would have minimal negative effects. We would not significantly alter any of the intact habitats, but may conduct activities (e.g., forest cuttings, invasive species control, permitted grazing) that could have some temporary negative effects. Wetlands and floodplains may be at some minimal risk of indirect effects from Service activities in upland areas that drain into them from leaks or spill accidents involving chemicals or petroleum products used in refuge management operations. Our leak and spill prevention and emergency clean-up procedures should ensure that such occurrences are rare, small, and are addressed immediately, limiting those short-term effects to the immediate location. We would employ accepted forestry best management practices on these lands, typically with longer rotation ages than commercial timber operations use, which would result in increased carbon sequestration. The predominance of more

mature stands would improve the health, diversity, and resilience of the forest to disturbance and disease and insect outbreaks, thus maintaining an important carbon "sink." Conversion of select agricultural lands to grasslands through soil grading, preparation, and seeding, would present minimal negative effects, and any appropriate best management practices will be used.

Alternative C -- Wetlands & Ridge Forests

In the "Wetlands and Ridge Forests" alternative, the Service would potentially protect through conservation easement or fee title up to 14,124 acres of wetland, forested upland, and agricultural/grassland habitats. We conclude that establishing the refuge to embrace these habitats would be a major positive effect for Cherry Valley. This alternative would enable protection of over 1,000 wetland acres, 9,900 upland forest acres, and 1,700 acres of agricultural and grasslands.

Alternative C would encompass many of the benefits of Alternative B; however, the benefits derived from this alternative would be smaller since the size of this refuge would be 14,124 acres instead of 20,466 acres. In a similar fashion, the negative effects would be essentially identical to Alternative B but of a slightly lesser degree due to the smaller potential size of this alternative.

4.2.2 Effects on Migratory Birds

Alternative A -- No Refuge

There would be negative effects on migratory birds resulting from the No Refuge alternative, principally due to the lost opportunity to protect significant amounts of habitats relied upon by these species on a local, regional, and continental scale. All of the habitats and ecosystems within the Study Area offer different forms of habitat to nearly every group of birds that inhabit eastern North America – raptors, waterfowl, colonial nesting birds, shorebirds, secretive marsh birds, grassland birds, and a diverse array of neotropical migratory birds. These habitats and ecosystems would continue to be threatened by encroaching development and other disturbances of an expanding human population competing for lands and water. Species in decline, or that are otherwise of conservation concern (Table 2-4), would directly be affected by an inability to further protect their habitats through refuge acquisitions and subsequent habitat management improvements. The negative effects would be cumulative over time, and in a broader context may contribute to a diminished regional habitat complex for these important inhabitants of the area.

Alternative B -- Diverse Habitat Complex

In the "Diverse Habitat" alternative, the Service would potentially protect through fee and easement acquisition up to 20,466 acres of wetland, forested upland, and

agricultural/grassland habitats (Table 3-2). Protection of these lands and habitats for migratory birds is a driving factor in the Study Act and this Final EA, and would have direct, immediate, and long term positive effects on resident, breeding, migratory, and wintering species of migratory birds and game birds. Narrative background on the status of migratory birds in the valley in Chapter 2 - Affected Environment provides a clear indication of the species that are imperiled or in some stage of decline, and the habitats they rely upon (see also Appendix C, Table C-2).

As discussed in Chapter 2, the large blocks of unfragmented forest throughout the Kittatinny Ridge serve as key breeding sites for many interior-forest birds, including ruffed grouse, wood thrush, ovenbird, scarlet tanager, cerulean warbler, worm-eating warbler, Louisiana waterthrush, Acadian flycatcher, and many others. Some of these are species of conservation concern that may be on the brink of being threatened or endangered, or are on the Audubon National Bird Conservation WatchList (see Appendix C, Table C-2). In contrast, the bald eagle has improved significantly over its range and was recently removed from Endangered Species Act protections in 2007. However. this species is still protected under the Eagle Act and, as provided by the National Bald Eagle Management Guidelines (USFWS 2007b), it is imperative to continue to protect vital eagle habitat and avoid habitat fragmentation and human disturbance to protect this species.

Providing a diversity of habitats and ecosystems defined in Alternative B would contribute significantly to the health and stability of bird populations in the area while also contributing to the regional and continental goals of the Appalachian Mountain Bird Conservation Region and its associated conservation concept plan (Appalachian Mountain Bird Conservation Partnership 2005). Even more broadly, land protection carried out through Alternative B would contribute directly to goals of the Conservation Plan for the Kittatinny Ridge in Pennsylvania (Audubon Pennsylvania 2006), and the other bird conservation plans noted in Chapter 1 – Study Purpose and Planning Considerations and Chapter 3 –Alternatives.

Once acquired, habitats would be managed to enhance their ecological function for migratory birds and to maintain their health and viability over the long term. Wetlands would be a priority for protection, and, where appropriate, would be managed for waterfowl and associated colonial wading birds and secretive marsh birds. Forests would be managed to assure their value as breeding habitat for neotropical migrants, along with other needs such as Indiana bat, black bear, and balanced populations of white-tail deer. Grasslands would serve the needs of bobolink, meadowlark, and several sparrow species, and could be expanded into viable breeding units for select species through wildlife management applications on adjacent agricultural lands.

Further details on management for migratory birds are presented in Appendix B – Conceptual Management Plan, and potential negative effects of habitat management activities on a new refuge are covered above in the “Habitat and Ecosystems” section.

Alternative C -- Wetlands and Ridge Forests

In the "Wetlands and Ridge Forests" alternative, the Service would potentially protect through fee and easement acquisition up to 14,124 acres of wetland , forested upland, and agricultural/grassland habitats (Table 3-3). As described in Alternative B, protection of these lands and habitats for migratory birds is a driving factor in the Study Act and this Final EA, and would have direct, immediate, and long term positive effects on resident, breeding, migratory, and wintering species of migratory birds and game birds.

Providing a diversity of habitats and ecosystems defined in Alternative C would contribute significantly to the health and stability of bird populations in the Study Area while also contributing to the regional and continental goals of the Appalachian Mountain Bird Conservation Region and its associated conservation concept plan (Appalachian Mountain Bird Conservation Partnership 2005). Even more broadly, land protection carried out through Alternative C would contribute directly to goals of the Conservation Plan for the Kittatinny Ridge in Pennsylvania (Audubon Pennsylvania 2006), and the other bird conservation plans noted in Chapter 1 – Study Purpose and Planning Considerations and Chapter 3 –Alternatives.

Alternative C would encompass most of the benefits of Alternative B; however, the benefits derived from this alternative would be smaller since the size of this refuge would be 14,124 acres instead of 20,466 acres. In a similar fashion, the negative effects would be essentially identical to Alternative B but of a slightly lesser degree due to the smaller potential size of this alternative.

4.2.3 Effects on Endangered and Threatened Species

Alternative A -- No Refuge

The No Refuge alternative would likely present long term and cumulative negative effects on threatened and endangered species (i.e., ESA-listed species) since it would not provide any additional protection measures for the valuable inter-montane wetlands, Kittatinny Ridge forests, and grasslands in the valley. Lack of strengthened protection measures would impede abilities to enhance wetland habitat for bog turtle, and would directly impede opportunities to meet the multiple goals (re: Affected Environment – Chapter 2) of the bog turtle recovery plan which recognizes extant habitats in the Delaware recovery unit as critically important for the overall recovery of this threatened species (USFWS 2001) . Continued development could lead to siltation and other forms of non-point source pollution, and also exacerbate the chronic struggle to prevent habitat fragmentation and expansion of invasive plants, both known to have negative effects on this species, as well as most others. The No Refuge alternative would also hamper any efforts to acquire and manage new habitats that may serve to attract formerly occurring listed species such as the Indiana bat and the dwarf

wedgemussel, species that live nearby and could expand into the valley with appropriate habitat protections and management. Local land and habitat protection efforts and programs noted in earlier chapters would continue to be the basis of protecting these areas, and conclusions have been reached already that these measures are inadequate, especially for sensitive species such as bog turtle and dwarf wedgemussel. Without further guarantees for protecting the wildlife habitat values in the valley, the development pressures in the valley could ultimately jeopardize habitats for these imperiled species.

Alternative B -- Diverse Habitat Complex

Narrative background on the status of listed species in the Study Area in Chapters 1 and 2, and Table 2-4 in the Affected Environment -- Chapter 2, provide ample information on the nature and status of listed species that are imperiled or in some stage of decline, and the habitats they rely upon.

Protection of these lands and habitats for threatened and endangered species, as with migratory birds, is also a driving factor in the Study Act and the Final EA, and would have direct, immediate, and long term positive effects on the bog turtle, and would offer immediate opportunities to assist in the recovery of the Indiana bat and the dwarf wedgemussel. For bog turtle, wetland habitat protection would provide opportunities for the refuge to contribute to six of eight goals in the 2001 recovery plan: 1) secure long-term protection of bog turtle populations, 2) conduct surveys of known, historical, and potential bog turtle habitat, 3) investigate the genetic variability of the bog turtle throughout its range, 4) manage and maintain bog turtle habitat to ensure its continuing suitability for bog turtles, 5) conduct an effective law enforcement program to halt illicit take and commercialization of bog turtles, and 6) develop and implement an effective outreach and education program about bog turtles. Within the recovery plan, the goal for the Delaware recovery unit is to protect at least 80 viable bog turtle populations and sufficient habitat to ensure the sustainability of these populations. This recovery unit is divided into east and west subunits, of which Cherry Valley lies in the Delaware west subunit, consisting of the Delaware River watershed west of the Delaware River. To meet the recovery criterion for this unit, at least 20 populations must be protected in the Delaware West Subunit (USFWS 2001). Establishment of a refuge in the valley through Alternative B would, again, contribute directly to this goal.

The large blocks of unfragmented forest, and forested and shrub wetlands, throughout the ridge and valley likely serve as valuable foraging habitat for Indiana bats. Alternative B offers a chance to permanently secure Hartman's Cave and its environs, widely recognized as a site that may once again serve as a hibernaculum for this species, if properly protected and managed. Acquiring select aquatic habitats and ecosystems defined in Alternative B also offers an opportunity to secure habitats that could be improved for possible reintroduction of dwarf wedgemussel.

Once acquired, habitats would be managed to enhance their ecological function for ESA-listed species. Wetlands would be a priority for protection, and would be managed for bog turtles, and as mention previously, waterfowl, associated colonial wading birds, and secretive marsh birds. Forests would be managed to assure their value as foraging habitat and potential female maternity roosts for Indiana bats in summer. While management activities could have some negative effects on listed species, there would be long-term benefits to the populations over time. The Service has completed intra-Service consultation on this document and the attached Conceptual Management Plan (Appendix B). Further information on effects of management actions on listed species is available in Appendix B, and Appendix B, Attachment B.3. Considering a wide range of activities could occur at multiple locations the Service will conduct intra-Service consultations on those activities that may affect federally listed species to ensure listed species are considered and conserved.

Alternative C -- Wetlands & Ridge Forests

In this alternative -- "Wetlands and Ridge Forests" -- the Service would potentially protect t up to 14,124 acres of wetland, forested upland, and agricultural/grassland habitats (Table 3-3). Alternative C would encompass most of the benefits of Alternative B; however, the benefits derived from this alternative would be smaller since the size of this refuge would be 14,124 acres instead of 20,466 acres. In a similar fashion, the negative effects would be essentially identical to Alternative B but of a slightly lesser degree due to the smaller potential size of this alternative. As with Alternative B, management activities could have negative effects on listed species; however, there would be long-term benefits to the populations over time. Any effects on listed species associated with management activities would be addressed through consultation under the ESA.

4.2.4 Effects on Interjurisdictional Fish and Aquatic Organisms

Alternative A -- No Refuge

The No Refuge alternative would likely present long term and cumulative negative effects on interjurisdictional fish and aquatic organisms since it would not provide newly needed protection measures for the valuable inter-montane wetlands, streams, and riparian habitats. In most areas, riparian vegetation is well-established and stable, providing a thick canopy important to fish, in particular native brook trout in upper reaches or tributaries of Cherry Creek. Currently, about 78 acres of stream and riparian habitat are protected, considerably less than the additional acres that could be offered in the other alternatives. Some creeks and streams are more vulnerable to point- and non-point source pollution, depending on their proximity to development, and the "No Refuge" alternative would not allow the Service to assist in decreasing non-point source

pollution in the area by acquiring lands or easements. As noted in the "Habitat and Ecosystems" section above, the greatest impediment with Alternative A is the continued inadequacies of land protection measures for the area's fish and wildlife resources.

Lack of strengthened protection measures would impede abilities to enhance stream and riparian habitats that are known to be used by American eel, an interjurisdictional fish species facing significant declines due to an internationally-based high consumer demand (especially for juvenile glass eels), insufficient harvest limits, hydropower dams and other blockages on rivers and streams used by migrating eel, and a general degradation of freshwater habitats. Concern for the eel by the Atlantic States Marine Fisheries Commission resulted in the Service and the National Marine Fisheries Service considering the species for possible listing under the ESA, but the review indicated that although there remain serious concerns, listing was not warranted (USFWS 2007a). Protection of eel habitat is an essential measure needed to safeguard this species, a safeguard not provided by Alternative A. The No Refuge alternative would also hamper any efforts to protect and manage habitats that may serve to attract other interjurisdictional species such as herring (*Alosa* spp) and striped bass. Further details on management for interjurisdictional fish species are presented in Appendix B – Conceptual Management Plan, and potential negative effects of habitat management activities on a refuge are covered above in the "Habitat and Ecosystems" section.

In addition to interjurisdictional fish, over 40 other fish species have been identified within the Study Area (Appendix C, Table C-3). Three mussel species have been identified in Cherry Creek. The relatively common eastern elliptio and creeper mussels appear to have stable populations, while the triangle floater has been classified as vulnerable by the Pennsylvania Natural Heritage Program. As mentioned previously, the federally-listed, endangered dwarf wedgemussel is found in the Delaware River, upstream from the mouth of Cherry Creek, and the Eastern pearlshell mussel, a state-listed endangered species, once occupied habitat in the Cherry Creek watershed. The No Refuge alternative would offer little or no opportunity for reintroductions of these species into Cherry Creek.

Alternative B -- Diverse Habitat Complex

Alternative B would have essential, positive effects on interjurisdictional fish and aquatic organisms since it would provide additional and necessary protection measures for valuable stream and riparian habitats. With this alternative, over 250 acres of riparian habitat could be protected, compared to the current 78 acres of riparian habitat in Alternative A. Protecting these habitats, and managing vegetation along shorelines, could significantly mitigate non-point source pollution. As noted in the "Habitat and Ecosystems" section above, the greatest benefit to be gained from Alternative B is a heightened ability to protect the valley's interjurisdictional fish and aquatic resources.

In contrast to the No Refuge alternative, having a refuge that embraces new riparian habitats strengthens protection measures in the valley, thereby directly contributing to the conservation and potential recovery of the declining American eel, noted above. Protection of eel habitat is an essential measure needed to safeguard this species, a safeguard not provided by Alternative A. Alternative B would also strengthen efforts to acquire and manage new habitats that may serve to benefit other interjurisdictional species such as herring (*Alosa s*pp) and striped bass. Further details on management for trust species is presented in Appendix B – Conceptual Management Plan, and potential negative effects of habitat management activities on a new refuge are covered above in the "Habitat and Ecosystems" section.

Alternative B would also directly benefit other fish and aquatic resources in the valley. It would benefit the other 40 other fish species have been identified within the Study Area (Appendix C, Table C-3), and the three mussel species have been identified in Cherry Creek noted above. Notably, this alternative would offer opportunities for reintroductions of the federally-listed, endangered dwarf wedgemussel and the state-listed, Eastern pearlshell mussel. Other native mussels (e.g., alewife floater, and yellow lampmussel) may also be candidates for introduction in Cherry Creek.

In contrast to the positive benefits, negative effects on riparian areas and surface waters may be less than with Alternative A. The Service would follow best management practices for avoiding negative effects to riparian and aquatic habitats when implementing management activities. There would not likely be a need to build refuge structures in these areas and any other management activities would likely be able to avoid or minimize impacts to these habitats. In addition, protection of riparian and stream habitat will protect water quality and consequently will benefit the species within the stream.

Alternative C -- Wetlands & Ridge Forests

One of the largest differences between Alternative B and Alternative C, in terms of overall effects, is likely within this category. Alternative C would protect significantly less riparian habitat than Alternative B; about 90 additional acres of riparian conservation compared to over 260 acres of riparian habitat in Alternative B. While the general types and value of effects associated with Alternative C are similar to Alternative B, the over all magnitude of benefits would potentially be much less.

As described in Alternative B, there would be direct benefits to other fish and aquatic resources in the area including the many species of fish documented in the area (see Appendix C, Table C-3) as well as native mussel species.

Negative effects on riparian areas and surface waters would be somewhat greater with Alternative C compared to Alternative B. Without protection, approximately 110 acres of stream and riparian habitats could be subject to disturbances (e.g., forest clearing or

road building causing siltation in streams) that compromise their conservation value that could have adverse effects on interjurisdictional fish and aquatic species.

4.2.5 Effects on Other Wildlife

Alternative A -- No Refuge

Currently, the extensive and relatively unfragmented forests along the Kittatinny Ridge provide habitat for many animal species including large mammals such as white-tailed deer, black bear, coyote, and numerous smaller mammals including the Pennsylvania-threatened (and globally rare) Allegheny woodrat, Eastern small-footed bat, and Northern long-eared bat. Other habitats within the 6,313 acres of currently protected habitat include gray and red squirrel, raccoon, woodchuck, skunk, and opossum, often found in the more developed areas of the watershed. Common furbearers include mink, muskrat, beaver, and otter. Cherry Valley is also designated as an Important Mammal Area (Important Mammal Areas Project Website 2008) due to the presence of Hartman's Cave and four bat species currently using the cave. Game birds can also be found in these forest habitats including ruffed-grouse in early successional forest, woodcock in mesic and wet forest areas, and wild turkey just about anywhere. The Kittatinny Ridge also supports cliffs and associated rocky talus slopes that provide habitat for black vultures, turkey vultures, and common ravens. Spotted turtles, wood turtles, four-toed salamanders, and marbled salamanders, all thought to be declining, can be found within the Study Area's wetlands and vernal pools. Though totaling a relatively small ten acres or so, the cliffs also support several reptile species such as the five-lined skink, fence lizard, timber rattlesnakes, and other snake species.

The No Refuge alternative would offer no further protections for these habitats and species of concern, and would likely present long term and cumulative negative effects. This "No Refuge" alternative would limit efforts to impede encroaching development and the associated wildlife-urban interface problems involving foraging skunks, raccoons, fox, bear, and coyote. Such wildlife-urban interface problems easily distract fish and game officials from performing duties that enhance wildlife populations and wildlife-dependent recreational opportunities. Lack of strengthened protection measures would impede abilities to manage habitats for species of concern, or for recreational hunting and fishing opportunities.

Alternative B -- Diverse Habitat Complex

In contrast to the No Refuge alternative, Alternative B would have positive, long lasting effects on other wildlife described above, and it would provide additional protection measures for all of the diverse habitats needed by these species. With this alternative, up to 20,466 acres of habitat could be protected, considerably more than the current 6,313 acres of protected habitat. Protecting these diverse habitats, and managing them to fully realize their ecological function and integrity, could significantly mitigate a host

of potential negative effects discussed above that are likely to occur without establishing a refuge. This alternative could significantly curtail encroaching development and associated wildlife-urban interface problems, thus better enabling fish and game officials to perform duties that enhance wildlife populations and wildlife-dependent recreational opportunities. Further details on management for other wildlife is presented in Appendix B – Conceptual Management Plan, and potential negative effects of habitat management activities on a new refuge are covered above in the "Habitat and Ecosystems" section.

Alternative C -- Wetlands & Ridge Forests

Alternative C would encompass most of the benefits of Alternative B; however, the benefits derived from this alternative would be smaller since the size of this refuge would be 14,124 acres instead of 20,466 acres. In a similar fashion, the negative effects would be essentially identical to Alternative B but of a slightly lesser degree due to the smaller potential size of this alternative.

4.2.6 Effects on Plants

Alternative A -- No Refuge

Currently over 6,300 acres of valuable habitat is protected in the Study Area. As discussed in Chapter 2 (Affected Environment, Table 2-4) and Chapter 3 (Alternatives), these ecological systems provide habitat for a broad array plants, especially for unique and rare plants currently in decline. These plants, listed as endangered, threatened, or at-risk by either the federal or Pennsylvania-state governments, include the Northeastern bulrush, Northern water plantain, Bebbs sedge, yellow sedge, variable sedge, hemlock parsley, wild bleeding heart, matter spike-rush, and capitates spike rush. Most, but not all, of these species are associated with wetlands, strongly indicating reliance on the Study Area's wetland habitats. According to The Pennsylvania Natural Heritage Program (WPC 2008), at least ten globally rare plant species exist in the Cherry Valley area, including the spreading globe flower, a small blooming aquatic buttercup that prefers open wetlands valleys.

The valley also suffers, as do most communities and regions, with invasive plants that quickly establish themselves in disturbed land areas. Grasslands throughout the physiographic area are being significantly degraded by succession and through colonization of these areas by invasive plant species. The expansion of fast spreading invasive species such as multi-flora rose, autumn olive, purple loosestrife, Japanese knotweed, and common reed (*Phragmites* spp) into grassland and wetland habitats very quickly makes these habitats unsuitable for many species of birds and other wildlife.

The No Refuge alternative would offer no further protections for these habitats and plant species of concern, and would likely present long term and cumulative negative

effects. This "No Refuge" alternative would limit efforts to impede encroaching development and it's displacement of rare plants and its concomitant introduction of invasive plants. It could also increase the need for extremely difficult and expensive control measures that to curb the spread of these invasive species.

Alternative B -- Diverse Habitat Complex

Compared to the No Refuge alternative, Alternative B would have positive, long-lasting effects on native and rare plants in the valley. It would provide additional protection measures for all of the diverse habitats needed by these plant species, and would offer new opportunities to improve habitats that may attract the reemergence of species such as the small-whorled pogonia. With this alternative, up to 20,466 acres of habitat could be protected, considerably more than the current 6,313 acres of protected habitat. Protecting these diverse habitats for native plants, and managing them to fully realize their ecological function and integrity, could significantly mitigate a host of potential negative effects discussed above that are likely to occur without establishing a refuge. This alternative could significantly curtail encroaching development and its introduction of invasive plants. Invasive plants can cause major damage to native plant assemblages and the wildlife they support, and we would take steps to insure that invasive species do not become established and degrade the wetlands and grasslands within the refuge. Further details on management for other wildlife is presented in Appendix B – Conceptual Management Plan, and potential negative effects of habitat management activities on a new refuge are covered above in the "Habitat and Ecosystems" section.

Alternative C -- Wetlands & Ridge Forests

Alternative C would encompass the benefits of Alternative B; however, the benefits derived from this alternative would be smaller since the size of this refuge would be 14,124 acres instead of 20,466 acres. In a similar fashion, the negative effects would be minimal, and would be essentially identical to Alternative B but of a slightly lesser degree due to the smaller potential size of this alternative.

4.3 Effects on the Socioeconomic Environment

Socioeconomic environment identifies those elements of the social, cultural or economic environment that are susceptible to change and may be affected by any of the potential alternatives. Specific characteristics of these alternatives, such as changes in potential public use or access to the refuge or changes to budget and staffing for the refuge, can be important sources of potential impact for the visitors of the refuge and the surrounding Monroe County community. Changes in public use opportunities potentially affecting refuge visitation and visitor spending in the surrounding local communities, changes in land use potentially affecting local open space needs and land

values, and changes in overall refuge management could affect the area around the refuge.

4.3.1 Effects on Public Use and Access

Providing opportunities for compatible wildlife-dependent public uses, including hunting, fishing, environmental education, interpretation, wildlife observation and photography, is integral in our overall management of the refuge. These are priority uses of the Refuge System. Other refuge uses may also be provide public benefit, and may be allowed if they are determined to be appropriate and compatible with the established refuge goals and the Refuge System mission.

Alternative A -- No Refuge

The No Refuge alternative would allow the Service to provide addition opportunities for public access for wildlife-dependent recreational opportunities as defined above. Hunting is a prized activity by many of the residents of Cherry Valley. Private lands are largely posted, greatly limiting hunting access. Non-residents of Cherry Valley are sometimes able to obtain permission from landowners for hunting, but this occurs on a limited basis. Cherry Creek is also a valued trout fishery. At least one fishing club leases fishing rights along the Cherry Creek. Like hunting, fishing is limited due to the posting of private land and limited public access. Cherry Valley provides a wealth of wildlife for observation and photography; however, viewing opportunities are limited by access. The narrow county and township roads running through the valley do not provide adequate pull-offs so safety is a concern. Environmental education is limited by the lack of support facilities in the valley, although there is a strong Environmental Education program at the Monroe County Conservation District that reaches out to more than 25,000 students annually. Currently, the Conservation District brings every 4th grader to the Tannersville Cranberry Bog in nearby Pocono Township, but there are few other easily accessible, nearby habitats to take students.

Alternative B -- Diverse Habitat Complex

For this alternative, the Service proposes acquiring up to 20,466 acres of wetland, forested upland, and agricultural/grassland habitats (Table 3-2). We conclude that establishment of a refuge that includes these habitats would be a major positive effect for promoting a number of wildlife-dependent uses on the refuge. As the refuge matures in size and staff over time, and as the CCP and Visitor Use Plans are developed, the specific types and limits on public use would be determined. It is expected, however, that early in the process there would be new opportunities for the “Big-6” public uses defined above. Most notably is the potential for creation of trails, hunting and fishing access, wildlife interpretation, and wildlife observation and photography. Environmental education is typically more intensive in nature and may take time to

develop. Determinations on the compatibility of these wildlife-dependent public uses are incorporated into the Conceptual Management Plan – Appendix B.

Establishing trails at the refuge is likely, and would facilitate environmental education, wildlife observation and photography, and wildlife interpretation. Foot travel from visitors using the refuge for walking/hiking, backpacking, cross country skiing, snowshoeing, or conducting research on the refuge increases root exposure, trampling effects, and crushing of plants. We would continue to expect and encourage refuge visitors to stay on designated trails, thus minimizing vegetation compaction and soil loss. Those impacts would primarily occur in the trail footprint. Visitors may also spread invasive plants. When people move from one area to another, they can be pathways for seeds or other propagules of invasive plants. Once established, invasive plants can out-compete native plants, thereby altering habitats and affecting wildlife. The threat of invasive plants establishing themselves will always be an issue that requires monitoring. Encouraging visitors to remain on designated trails will assist in the monitoring and control efforts for invasive species.

Hunting can cause disturbance to vegetation because of trampling, and if vehicles are permitted on refuge roads, there is soil disturbance with that activity. We expect, however, trampling of vegetation would be minimal. In addition, most hunt seasons occur during the winter months, when vegetation is dormant. Direct impacts on wildlife can be expected wherever humans have access to an area. In general, human presence disturbs most wildlife, which typically results in a temporary displacement without long-term effects on individuals or populations. Some species will avoid areas frequented by people, such as developed trails and buildings, while other species seem unaffected or even drawn to a human presence. When visitors approach too closely to nests, they may cause adult birds to flush, exposing the eggs to weather events or predators. Overall, direct effects should be insignificant from non-consumptive visitor activities because use of refuge lands is fairly dispersed, and large areas are not accessible. in general, visitors will not be allowed access to sensitive habitat and species. The direct effects of any authorized hunting would be carefully documented and reviewed as official hunt plans are developed. Hunt plans account for what harvest levels can be sustained for a species without adversely affecting its overall population. As such, hunting results in individual losses, but the projected cumulative harvest should not jeopardize the viability of any harvested species' population. Some disturbance to non-target wildlife species may occur; however, those impacts should be minimal because hunting pressure is moderate and usually occurs outside of breeding seasons.

Any permitted fishing on the refuge would follow Pennsylvania regulations, including harvest limits for certain species. These limits are set to ensure that harvest levels do not cumulatively impact native fish resources to the point they are no longer self-sustaining.

A refuge in the Cherry Valley area would expand the Monroe County Conservation District Environmental Education Program's ability to provide students with a diverse set of habitats and field education experiences. These activities are currently focused at Tannersville Cranberry Bog in Pocono Township.

Overall negative effects from public use in Alternative B would not necessarily be much greater than for Alternative C. While there will be more opportunity for public use of the refuge because of the additional lands, impacts will be spread out over the properties likely resulting in similar densities of use.

Alternative C -- Wetlands & Ridge Forests

Alternative C would encompass the benefits of Alternative B; however, the public use benefits derived from this alternative would be smaller since the size of this refuge would be 14, 124 acres instead of 20,466 acres. This could result in fewer areas for public use activities compared to Alternative B. In a similar fashion, the negative effects would be minimal, and would be essentially identical to Alternative B but of a slightly lesser degree due to the smaller potential size of this alternative. It is possible, however, that greater public use densities would occur in some areas under Alternative C due to the smaller refuge area, and thus some sites might be exposed to slightly more negative public use impacts.

4.3.2 Effects on Land Use

Within the Study Area, a majority of lands are considered to be in "open" (not developed) land uses and most parcels are in private ownership. Land use within the Study Area, classified into ten general categories based on Monroe County tax records (Table 2-5), can be easily grouped into open space parcels and developed parcels. Developed parcels, which include residential and industrial properties, collectively account for about 30 percent of the Study Area. Open space parcels, which include agriculture, parks, forest, vacant, and in this case, property owned by utilities, together account for nearly 70 percent of the Study Area. Chapter 2, Figure 2-5 shows developed and open space lands within the Study Area.

Alternative A -- No Refuge

The No Refuge alternative would most likely have a negative effect on land use since it would result in a continued reliance of current protection measures for controlling development and protecting valuable habitats. These measures do not provide for adequate protection of habitats and development pressure would continue. As noted above, the rate of development in the Study Area has declined since 2005. However, the decline is the result of market forces and not land conservation priorities. Not having the ability to secure valuable habitat for acquisition within a refuge eliminates a

significant conservation and wildlife-oriented recreational tool for the area and its citizens.

Alternative B -- Diverse Habitat Complex

In the "Diverse Habitat Complex" alternative, the Service would acquire up to 20,466 acres of wetland, forested upland, and agricultural/grassland habitats (Table 3-3). This could have a direct and long term positive effect on curbing development encroachment while maintaining and enhancing a significant amount of wildlife habitat and open space in the area. Currently about 6,313 acres are protected. Having the ability to acquire lands and habitats for a refuge would enable protection of most of the 13 extant ecological systems (Table 2-2) indentified in the Study Area, thus helping to maintain the exceptional rural and natural quality of Cherry Valley, while opening new opportunities for conserving declining species and expanding opportunities for wildlife-dependent recreational activities.

Alternative C – Wetlands & Ridge Forests

The effects of Alternative C – Wetlands and Ridge Forests – on land use would be largely positive, and would contribute almost all of the benefits as described in Alternative B. The benefits derived from this alternative would be somewhat less since the size of this refuge would be 14,124 acres instead of 20,466 acres but would enable the protection of portions of 12 of the identified ecological systems in the Study Area. In a similar fashion, the negative effects would be minimal, and would be essentially identical to Alternative B but of an even lesser degree due to the smaller size of the Wetlands and Ridge Forests alternative.

4.3.3 Effects on Local Economy

Alternative A – No Refuge

There would be no expected change in the local economy under the No Refuge alternative, as current development rates, tax revenues, and business revenues, would remain subject to market influence. Any changes would be due to existing influences and market forces and would not be associated with federal activities. A potential, but unsubstantiated, economic outcome of not having a refuge in the valley would be loss of refuge visitor expenditures at local businesses and establishments. Visitors to the refuge would be expected to grow steadily as the size of the refuge grew and public use opportunities were created. Typical public use activities such as hunting and fishing, hiking, bird watching, wildlife photography, plant identification, and general scenic appreciation would become a normal economic mainstay for the area.

Alternative B – Diverse Habitat Complex

Recreational use on refuges generated almost $1.7 billion in total economic activity during fiscal year 2006 (USFWS 2006). The report, titled *Banking on Nature 2006: The Economic Benefits to Local Communities of National Wildlife Refuge Visitation* was compiled by Service economists. According to the study, nearly 35 million people visited refuges in 2006, supporting almost 27,000 private sector jobs and producing about $543 million in employment income. In addition, recreational spending on refuges generated nearly $185.3 million in tax revenue at the local, county, state, and federal levels. The economic benefit is almost four times the amount appropriated to the Refuge System in Fiscal Year 2006. About 87 percent of refuge visitors travel from outside the local area (USFWS 2006). This information gives an indication of how the creation of a Cherry Valley NWR could be of economic benefit to the local economy.

The fiscal impact to Monroe County and its townships, if a refuge is established, would depend on both the quantity of land acquired and the rate of acquisition. While land owned by the U.S. Government is not taxable by state or local authorities, the federal government has a program in place to compensate local governments for foregone tax revenues. The Refuge System typically makes an annual payment in lieu of taxes to local governments. The amount of the payment depends on the final Congressional budget appropriations for the Service for that year. Recently, the payment has been less than what the state or local government may have received through normal taxation. It should be noted that the parcels with the highest assessed value within the Study Area (i.e., residential, industrial, and retail) are parcels that have the least desirable characteristics for conservation. Additional details are provided in the Economic Assessment (Appendix D) and the Land Protection Plan (Appendix E).

Local economies usually benefit from refuge staff who live and shop in the community. There is no ability yet to predict the staffing level at the proposed refuge, although various scenarios are discussed in the Conceptual Management Plan (Appendix B). Once staff are located in the Cherry Valley area, there would be an expectation of some economic gain to the community, both with direct buying of goods and services by refuge staff but also secondary or multiplier effects for work generated by the various needs of the refuge resulting in some local financial output. Timber harvesting for saw timber, pulp, and fuelwood in support of local species habitat management is an economic activity that may be available to the local timber industry at some point. Such a determination would be made during development of the refuge's Comprehensive Conservation Plan.

Alternative C – Wetlands and Ridge Forests

The effects of Alternative C -- Wetlands & Ridge Forests – on the local economy would be largely positive, and would contribute almost all of the benefits as described in Alternative B. The benefits derived from this alternative would be somewhat less since

the largest size of this refuge would be 14,124 acres instead of 20,466 acres, and there may be a smaller staff and work opportunities for the local community. In a similar fashion, the negative effects would be essentially identical to Alternative B but of an even lesser degree due to the smaller potential size of the Wetlands and Ridge Forests alternative.

4.3.4 Effects on Cultural and Historic Resources

As noted in Chapter 2 – Affected Environment, there is some evidence of habitation in the valley and surrounding areas during pre-historic times by the Lenni-Lenape people whose occupation of the land preceded European settlers by thousands of years. Early records of contact between Native Americans and European colonists in the area date to 1609. Cherry Valley was well settled by European colonists before the middle 18th Century, and records show settlement by a large congregation of mostly German settlers who lived and worshiped within the valley.

Alternative A -- No Refuge

The No Refuge alternative could have a slight negative effect on the protection of historic and cultural resources, principally due to the lack of a continuous federal presence, which provides a clear responsibility for protection of these resources. There is an expectation on landowners and developers to take necessary precautions to ensure that no sites or structures on National Historic register would be affected by their activities in the valley.

Alternative B – Diverse Habitat Complex

The Service's protection of up to 20,466 acres of habitat would benefit cultural resources by ensuring that none of the substantial impacts related to development for residential or commercial uses would affect known or undiscovered cultural and historic resources on those lands. As with all federal activities, any activities involving soil disturbance will be reviewed by the Pennsylvania State Historical Preservation Office (SHPO) prior to any excavation work to ensure protection of cultural resources. There is some risk that refuge visitors may inadvertently or intentionally damage or disturb cultural and historic those sites; however, we would employ all means available to protect known sites, structures, and objects of importance for scientific study, public appreciation and socio-cultural use. We would also, where possible, promote archaeological research on, or relating to, refuge lands, add language from the Antiquities Resource Protection Act (ARPA) to appropriate public use materials to warn visitors about illegal looting, and maintain law enforcement personnel trained in ARPA enforcement.

Alternative C -- Wetlands & Ridge Forests

The effects of Alternative C -- Wetlands & Ridge Forests – on cultural and historic resources would be largely positive, and would contribute almost all of the benefits as described in Alternative B. The benefits derived from this alternative would be somewhat less since the size of this refuge would be 14,124 acres instead of 20,466 acres and the refuge would have a smaller area of influence. In a similar fashion, the negative effects would be essentially identical to Alternative B but of an lesser degree due to the smaller potential size of the Wetlands and Ridge Forests alternative.

4.3.5 Effects on the Soundscape

Emerging research from the National Park Service shows that there is serious concern about the effects of human induced sounds on the overall park experience. The agency also discovered that as many visitors said they were visiting parks to enjoy the "natural quiet" as much as to appreciate a park's visual beauty (National Park Service, Effects of Sound). In addition, there is evidence that human induced noise can interfere with various aspects of animal behavior including preventing predator warning signals, disrupting breeding behavior, and discouraging birds from singing during the day when noise levels are highest (Streater 2008). While the sounds of the wild are integral to the national park experience for visitors, reducing noise pollution is vital to the survival of wildlife, says the National Park Service (Streater 2008). Although there is no specific information about sound effects in the Cherry Valley area, the effects of man-induced sounds and noise on wildlife and visitors should not be underestimated.

Alternative A -- No Refuge

Distinct landforms, breathtaking vistas, unique habitats and species of special concern make Cherry Valley a special place for people and nature. Located less than two hours by car from Philadelphia and New York City, Cherry Valley's quiet landscape is threatened by the onrush of residential development. The Cherry Valley National Wildlife Refuge Study Area straddles parts of six municipalities in southeastern Monroe County. Developed parcels, which include residential and industrial properties, collectively account for about 30 percent of the Study Area. Residential properties, alone, cover nearly 20 percent of the total Study Area. Open space parcels, which include agriculture, parks, forest, vacant, and in this case, property owned by utilities, together account for nearly 70 percent of the Study Area, although much of the open space lands are not protected.

The No Refuge alternative for Cherry Valley would offer potential negative effects on increasing human-induced sounds due to the lack of new efforts to protect lands and waters that can serve as place of refuge from an anthropogenic landscape. With continuing development comes the associated sounds and noise from residential and

commercial traffic, motorcycles, helicopters, other aircraft, heavy equipment, air conditioners, and the like.

Alternative B – Diverse Habitat Complex

Alternative B would provide positive effects compared to Alternative A since creation of a Cherry Valley NWR up to 20,466 acres would reduce the potential for large-scale development and related human generated noise. Maintaining and improving extensive habitat areas for fish, wildlife, and visitors will provide an expansive buffer against nearby urban noises, thus providing a less threatening environment for breeding and foraging wildlife and a more serene soundscape for the visiting public. Trees help reduce noise levels in urban and suburban areas. Even a fifty foot wide belt of trees can reduce noise levels by as much as 50 percent (USDA Forest Service 2006).

Creation of a Cherry Valley NWR could stimulate some increase in human induced noise. Although visitors to a new refuge would generate traffic noise and some non-motorized noise (e.g., talking), it would be minimal in an overall landscape environment. The Service limits the uses of refuges to be compatible, wildlife-oriented, consumptive and non-consumptive uses, and thus, greatly curtails anthropogenic sources of noise. Currently there is no reliable way to estimate potential visitor use and effects on wildlife within the potential refuge boundary. However, we would employ our appropriate use and compatibility policies to ensure that noise levels would have no or minimal effects on wildlife. We expect use would include walking trails and related, non-motorized activities. These activities tend to generate low noise levels. The potential negative sound effects activities described in the Conceptual Management Plan (Appendix B) could include, for example, operation of refuge vehicles, constructing visitor interpretation and parking facilities, building refuge administrative headquarters, access roads, and constructing interpretive trails. We would use any available best management practices to help minimize noise levels at the refuge. In analyzing the effects of refuge management activities and public use on noise levels, we principally considered how Service actions at the refuge might affect sound locally, which will allow us to determine any effects on regional basis if necessary.

Alternative C -- Wetlands & Ridge Forests

The effects of Alternative C -- Wetlands & Ridge Forests – on the valley's soundscape would be largely positive, and would contribute almost of the benefits as described in Alternative B. The benefits derived from this alternative would be somewhat less since the size of this refuge would be 14,124 acres instead of 20,466 acres and the refuge would have a smaller area of influence on mitigating noise. In a similar fashion, the negative effects would be essentially identical to Alternative B but of a lesser degree due to the smaller potential size of the Wetlands and Ridge Forests alternative.

4.3.6 Cumulative Effects

According to the Council on Environmental Quality NEPA implementing regulations in 40 CFR 1508.7, "cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Physical Resources

Alternative A – No Refuge – would likely contribute to an acceleration of poor air quality over the long term simply due to the expected continued increases in development and its concomitant contributions to pollutant emissions. Neither Alternative B (Diverse Habitats) or C (Wetlands and Ridge Forests) are expected to have significant cumulative adverse impacts on air quality locally or regionally since they would help retain the natural habitat qualities within the proposed refuge boundary. Some short-term, local deterioration in air quality would be expected from air emissions of motor vehicles used by refuge visitors and staff. With our partners, we would continue to contribute to improving air quality through cooperative land conservation and management of natural vegetation and wetlands. We do not envision any activities that would have cumulative negative effects on soils or water quality, or to the local soundscape, and conclude that protection of lands and habitats in the refuge acquisition boundary would have clear positive benefits to these environmental attributes.

We expect none of the alternatives to have significant adverse cumulative impact on cultural resources in the valley. Beneficial effects would occur at various levels, depending on the alternative, because of proposed environmental education and interpretation programs, increased land protection, and increased field surveys to identify and protect any discovered sites. In Alternatives B and C we would identify high probability sites to survey more intensely.

Biological Resources

Under Alternative A – No Refuge – there would be an expectation of cumulative negative effects on the biological resources over the long term due to the lack of additional habitat protection for the fish and wildlife resources in the Study Area. No significant cumulative adverse effects to biological resources under Alternative B or C is expected since valuable habitats would be protected and their ecological integrity would be retained. Management activities proposed in Alternatives B and C, along with the Conceptual Management Plan, would be expected to have long term beneficial effects to the valley's fish and wildlife resources. We may manage some biological resources (i.e., invasive species) to prevent their introduction, control spread, or

eliminate. These species are usually not native components of the ecosystems. Losses of these biological resources where they occur would not be considered adverse.

National Wildlife Refuges and other protected areas harbor unique environments and wildlife not found elsewhere. This raises particular concerns about the vulnerability of these ecosystems to a changing climate. Many refuges are designated to protect rare natural features or particular species of plants and animals. Changes in climate could create new and potentially serious stresses on natural communities, and, in the absence of adaptation, lead to the loss of valued resources. Refuges and other protected areas are currently susceptible to events influenced by climatic variability, such as drought, wild fires, impaired air quality, and severe storms. Climate change may change the frequency and severity of these kinds of events. In some regions, the risk for drought and wildfire, for example, may increase with climate change (IPCC 2007). Along coastal regions, sea level rise could erode and inundate the beaches of coastal refuges, precipitating loss of salt marshes, beaches, loss of habitat in estuarine ecosystems, and damage to property and natural resources from storm surges (IPCC 2007).

The consequences of accelerating climate change on Cherry Valley are as yet unknown and are difficult to predict. A warming climate would most likely affect plant species composition and distribution, thus having an effect on wildlife and aquatic resources. The timeframe for these potential changes is unknown but management of the habitats (e.g., prescribed fire applications) and facilities (e.g., minimizing the carbon footprint) of a Cherry Valley National Wildlife Refuge would help the refuge adapt to the potential effects of climate change.

Socioeconomic Resources

There would be no expected long term cumulative change in the local economy under Alternative A – No Refuge – as current development rates, tax revenues, and business revenues would remain subject to market influences. A potential, yet unsubstantiated, economic long-term, cumulative outcome of not having a refuge in the valley would be a loss of refuge visitor expenditures at local businesses and establishments. Over time, visitors to the valley would be expected to grow steadily as the size of the refuge grew and public use opportunities were created. Typical public use activities such as hunting, fishing, hiking, bird watching, wildlife photography, plant identification, and general scenic appreciation would become a predictable and long term economic mainstay for the area.

Unavoidable Adverse Effects

Unavoidable adverse effects are the effects of those actions that could cause significant harm to the human environment and that cannot be avoided, even with mitigation measures. There would be some minor, localized unavoidable adverse effects under all the alternatives. The No Action alternative would maintain the status quo for

development and growth in the valley, thus contributing to the unavoidable effects of such development (e.g., increased air emissions, increased impervious surface and stormwater runoff, increased noise). Under Alternatives B and C, there could be, for example, localized adverse effects of building a new refuge headquarters and upgrading access roads. There would be property tax losses to towns and increased visitation that could have unavoidable effects. However, none of these effects rises to the level of significance. All would be mitigated, so there would in fact be no significant unavoidable adverse impacts under any of the alternatives.

Relationship Between Short-term Uses of the Human Environment and Enhancement of Long-term Productivity

Alternative A – No Refuge – would be expected to diminish the long-term productivity and sustainability of natural resources of the valley. In contrast, Alternatives B and C would strive to maintain or enhance the long-term productivity and sustainability of natural resources on refuge lands. These alternatives would strive to conserve federal trust species and the habitats they depend on, as evidenced by management activities described in the Conceptual Management Plan. These alternatives also outline outreach and environmental education activities that would encourage visitors to be better stewards of the environment.

Potential Irreversible and Irretrievable Commitments of Resources

Alternative A – No Refuge – would have no long term effect on potential irreversible and irretrievable commitments of federal financial resources. Establishing a refuge as described under Alternatives B and C may contribute to irreversible and irretrievable commitments of federal financial resources. For example, one would be the possible construction or modification of a refuge office and associated visitor facility and access road. These typically require long-term commitments of resources. Another irreversible commitment of resources impacting local communities is Service land acquisition. Once these lands become part of the refuge, it is unlikely they would revert back to private ownership

Environmental Justice

Executive Order 12898 " Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (February 11, 1994), requires that federal agencies consider as part of their action, any disproportionately high and adverse human health or environmental effects to minority and low income populations. Agencies are required to ensure that these potential effects are identified and addressed. The communities surrounding the refuge are relatively homogenous; minority groups do not represent a substantial portion of the affected community. No differential impacts based on minority status would therefore be anticipated under any of the alternatives.

4.3.7 Summary of Effects

Table 4-3. Comparison of potential environmental effects for Alternatives A, B, and C, evaluated in this Final EA for a proposed Cherry Valley National Wildlife Refuge, Pennsylvania.

Environment	Alternatives		
	Alternative A No Refuge	**Alternative B Diverse Habitat Complex (preferred action)**	**Alternative C Wetlands & Ridge Forests**
Air Quality	Likely to degrade due to continued development emissions; less carbon sequestration	Likely to improve due to curtailed development emissions and subsequent protection of established vegetation and associated plant photosynthesis; greater carbon sequestration	Likely to improve due to curtailed development emissions and subsequent protection of established vegetation and associated plant photosynthesis; greater carbon sequestration
Water Quality	Likely to degrade further due to continued development	Likely to improve due to curtailed development and protection of water filtering through habitats and root zone	Likely to improve due to curtailed development and protection of water filtering through habitats and root zone
Soils	Likely to erode due to continued development	Likely to be stable and functional due to curtailed development	Likely to be stable and functional due to curtailed development
Habitat and Ecosystems	Continued threat of development	Up to 20,466 acres protected for benefit of natural resources and new public use opportunities	Up to 14,124 acres protected for benefit of natural resources and new public use opportunities
Migratory Birds	Continued threat of development jeopardizes their habitat	Up to 20,466 acres of diverse habitats protected for benefit of waterfowl, neo-tropical migrants, and raptors	Up to 14,124 acres protected of wetlands and forests for benefit of waterfowl, neo-tropical migrants, and raptors
Threatened and Endangered Species	Continued development threatens recovery of bog turtle and other federal and state listed species	Up to 20,466 acres protected of wetlands and forests for benefit of bog turtle, Indiana bats, small-whorled pogonia, and other federal- and state-listed	Up to 14,124 acres protected of wetlands and forests for benefit of bog turtle, Indiana bats, small-whorled pogonia, and and other federal- and state-listed

Environment	Alternatives		
	Alternative A No Refuge	**Alternative B Diverse Habitat Complex (preferred action)**	**Alternative C Wetlands & Ridge Forests**
		threatened and endangered species	threatened and endangered species
Interjurisdictional Fish and Aquatic Organisms	Continued development likely degrades habitat for American eel, dwarf wedge mussel, and other aquatic organisms of conservation concern	Up to 20,466 acres protected of wetlands and forests for benefit of American eel, dwarf wedge mussel, and other aquatic organisms of conservation concern	Up to 14,124 acres protected of wetlands and forests for benefit of American eel, dwarf wedge mussel, and other aquatic organisms of conservation concern
Other Wildlife	Continued development likely degrades habitat for state species of concern, game mammals and birds, and small mammals and amphibians and reptiles	Up to 20,466 acres protected of wetlands and forests for benefit of state species of concern, game mammals and birds, and small mammals and amphibians and reptiles	Up to 14,124 acres protected of wetlands and forests for benefit of state species of concern, game mammals and birds, and small mammals and amphibians and reptiles
Plants	Continued development likely degrades habitat for federal and state species of concern; curtails ability to provide habitat for small-whorled pogonia and other declining plants	Up to 20,466 acres protected of wetlands and forests for benefit of federal and state species of concern, and provides habitat for small-whorled pogonia and other declining plants	Up to 14,124 acres protected of wetlands and forests for benefit of federal and state species of concern, and provides habitat for small-whorled pogonia and other declining plants
Public Use	No new opportunities for wildlife-dependent recreation: wildlife observation, photography, interpretation, environmental education, hunting, and fishing	Creates ample new opportunities for wildlife-dependent recreation: wildlife observation, photography, interpretation, environmental education, hunting, and fishing; refuge will contribute to “Children in Nature” initiative	Creates new opportunities for wildlife-dependent recreation: wildlife observation, photography, interpretation, environmental education, or hunting and fishing; refuge will contribute to “Children in Nature” initiative

Environment	Alternatives		
	Alternative A No Refuge	**Alternative B Diverse Habitat Complex (preferred action)**	**Alternative C Wetlands & Ridge Forests**
Land Use	Continued threat of development will decrease percent of wildlife habitat and open space	Up to 20,466 acres protected of diverse habitats will increase percent of wildlife habitat and open space	Up to 14,124 acres protected of wetlands and forests will increase percent of wildlife habitat and open space
Local Economy	All changes related to market forces. No projected benefits from refuge staff living in valley and procuring goods and services, no work opportunities for locals that would exist with a refuge, no additional recreation money from refuge visitors.	"Banking on Nature" report documents economic benefits of refuges for local economies; there would be expected benefits from refuge staff living in valley and procuring goods and services, and work opportunities for locals that would exist with a refuge; refuge revenue sharing funds provided to local government to offset loss of property taxes from lands acquired by the refuge. Possible recreation money from refuge visitors.	"Banking on Nature" report documents economic benefits of refuges for local economies; there would be expected benefits from refuge staff living in valley and procuring goods and services, and work opportunities for locals that would exist with a refuge; refuge revenue sharing funds provided to local government to offset loss of property taxes from lands acquired by the refuge. Possible recreation money from refuge visitors.
Cultural and Historic Resources	Cultural and historic resources retain protection through State Historic Preservation Office (SHPO)	Cultural and historic resources retain protection through SHPO but are also protected by presence of refuge and the federal oversight and responsibilities the refuge has to protect these resources	Cultural and historic resources retain protection through SHPO but are also protected by presence of refuge and the federal oversight and responsibilities the refuge has to protect these resources
Soundscape	Human-induced noise levels likely to increase due to continued development	Human-induced noise levels likely to remain low, and could be further mitigated, providing pleasant and quite experience for visitors to refuge	Human-induced noise levels likely to remain low, and could be further mitigated, providing pleasant and quite experience for visitors to refuge

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6 Public Consultation, Coordination, and Review

One of the requirements of the Cherry Valley National Wildlife Refuge Study Act is to provide an opportunity for public participation. Specifically, the Study Act states that "The Secretary … shall consult appropriate State and local officials, private conservation organizations, major landowners and other interested persons, regarding the identification of eligible lands, waters, and interests therein that are appropriate for acquisition for a national wildlife refuge and the determination of boundaries within which such acquisitions should be made." (Section 603 (b)). The Service has complied with this direction through stakeholder briefings; formation and meetings of the CVST; public scoping meetings; solicitation of public review and comment on a Draft Cherry Valley National Wildlife Refuge Feasibility Study and Environmental Assessment (Draft EA); and additional public meetings to receive input on the Draft EA.

6.1 Communication and Coordination with Agencies and Organizations

The Service began working with other agencies and organizations shortly after passage of the Study Act. In February 2007, Service staff held preliminary scoping meetings and site visits with the Pennsylvania State Director of The Nature Conservancy and members of his staff, along with the manager of the Monroe County Conservation District and Executive Director of the Monroe County Planning Commission. In October 2007, Service staff briefed aides to Rep. Paul Kanjorski, Senator Bob Casey, and Senator Arlen Specter. In addition, we briefed the Executive Director of the Pennsylvania Game Commission and aides to the Executive Director of the Pennsylvania Fish and Boat Commission on plans to initiate the study. Also in October 2007, Service provided a briefing during the annual meeting of Friends of Cherry Valley.

As discussed in Chapter 1, to help complete the study and provide additional opportunities for public participation, the Service established the Cherry Valley Study Team (CVST). The CVST includes representatives from a variety of agencies, organizations, and local academic institutions (see Table 1-1 for a list of participating agencies and organizations). Between October 2007 and September 2008, the CVST met four times to collect information to develop the study, discuss the current status of the study, and provide comments on the Service's overall approach.

6.2 Public Participation and Issue Identification (Scoping)

In addition to stakeholder briefings and CVST meetings, the Service held two public meetings in March 2008 to solicit public comments on a potential Cherry Valley National Wildlife Refuge. The Service also established a public comment period from March 2008 through the end of April 2008 wherein written comments on the potential establishment of a refuge in Cherry Valley were solicited. Additional issues, questions, and concerns were identified in the comments received during the public meetings, and in letters and e-mails received during the comment period. More than 200 people attended the meetings, and 15 organizations and agencies, along with numerous

individuals, presented oral comments at these meetings.

To assist in communicating with stakeholders and obtaining public input, a newsletter and website (www.fws.gov/northeast/planning/Cherry%20Valley/lcphome.html) were also created. We distributed approximately 650 copies of the Cherry Valley newsletter by email and U.S. Postal Service to municipal officials, community leaders, and other interested parties. In addition, the following organizations distributed the newsletter through their mailing lists: Monroe County Federation of Sportsmen's Clubs, Lehigh Gap Nature Center, Monroe County Open Space Update Committee, Pennsylvania Federation of Sportsmen's Clubs, and The Nature Conservancy. In total, we estimate that over 1,500 copies of the newsletter were distributed. The newsletter provided information about the study and upcoming public meetings. Finally, the Service distributed a news release to 12 media outlets in the Cherry Valley region in advance of the public meetings, and the events received extensive coverage in the *Pocono Record* – the major daily newspaper serving Monroe County.

In general, the public response was very supportive of establishing a Cherry Valley National Wildlife Refuge. Written or spoken expressions of support for Refuge establishment were received from**:**

- Numerous area residents
- Appalachian Trail Conservancy
- Brodhead Watershed Association
- Cherry Valley Community Supported Agriculture Project
- Friends of Cherry Valley
- Paul Kanjorski, Member of Congress
- Lehigh Valley Audubon Society
- Lenape Tribe
- Monroe County Commissioners
- Monroe County Federation of Sportsmen's Clubs
- Pocono Environmental Education Center
- Pocono Heritage Land Trust
- Pocono Builders Association
- Pocono Mountains Visitors Bureau
- Shawnee on Delaware Preservation Society
- Stroud Township
- Stroudsmoor Country Inn (conditional; see full notes)

6.3 Specific Questions, Comments, and Concerns Identified During Scoping

Comments received during the initial public meetings and public comment period usually fell into one or more of nine general categories, some of which have been discussed in Chapter 1. These categories and their particular issues can be summarized as follows:

The NWR Process/Policies/Study Area

- Shawnee Creek Valley and Mosier's Knob should be included in the study area because of their natural resource values (e.g., presence of bog turtles).
- Can areas to the southeast (e.g., Minsi Lake or Mount Bethel fens) be included in the study area?
- What does the line/boundary of the study area represent, and how was it chosen?
- Does the Service consider cultural resources when planning a refuge?
- Do long-range plans address already planned developments?
- How long does the process of creating a NWR usually take?
- How are National Wildlife Refuges funded?
- Does the Service use condemnation to acquire land for a refuge?
- What will prevent landowners from selling wetlands to the Service, and selling farmland to developers anyway?
- Does the Service lease land back to farmers?

Stewardship/Land Management

- Importance of educating current and future landowners about preserving their property.
- People living here have been those who want to live in close harmony with the land: Farmers, birdwatchers, hunters, fishers, gardeners, rabbit and bee-keepers, etc. They will continue to be good stewards, whether or not members sell land to the refuge.
- What assurances do residents have that refuge maintenance costs will continue to be paid? Residents are concerned about the status of the Service's budget.
- Under Service management, will vistas disappear because farmland will be allowed to succeed to forest?
- Is there a potential for partnering with local government or conservation organizations to provide adequate staffing if this is a problem for the Service?

Access/Activities

- The refuge has the support of the Monroe County Federation of Sportsmen's Clubs, and may get the support of the State Federation as well.
- The study team should publicize more that the refuge will be a multi-use area that people can use to hunt, fish, hike, cycle, etc., to help build the grassroots effort and yield greater involvement.
- One resident asked whether refuge establishment would lead to restrictions on hunting.
- How will public access to the refuge be controlled? How will the Service prevent trespass on private lands? What recourse will be available for residents to prosecute trespassers?
- Will horseback riding be included as an acceptable use?

Habitat/Conservation of Species

- Preserving plants and animals is most important; we should not adversely affect nature.
- There is a need for increased conservation of the area surrounding the Appalachian Trail, not just the right-of-way.
- One resident recommended a full natural resource inventory of Cherry Valley.
- The designation of Cherry Valley as a refuge supports local conservation plans and what hundreds of residents have said they want at other public meetings: Preservation of open space.
- How much of the valley is currently protected, and is this protection permanent?

Local Economic Effects

- How will the establishment of a refuge affect the economic situation of businesses in the valley and the livelihoods of people who depend on them?
- Can the Service ensure that the Stroudsmoor Country Inn, if within the refuge area, will not be at a competitive disadvantage, or expected to meet a higher bar, making it impossible to expand in the future?
- What will the economic changes/benefits be for current residents?
- How will the local tax base be affected?
- How will property values be affected?

Farming

- Keeping land in farms is important; when farm land is developed, "houses are the last crop it will ever grow."
- The changing attitudes of younger generations towards farming pose a threat to the habitat and way of life of Cherry Valley.
- Organic farming is important to the valley.

What Makes the Area Attractive

- The main reasons the area is attractive to visitors include "ease, authenticity, and refreshment" built upon the preservation of the natural environment, coupled with sustainable development.
- The area's scenic views and habitat are important to retaining residents and attracting them to the area. There is a place for everything, and this [the refuge/preservation] is the best use for the land.

Education/Research Opportunities

- The refuge has the potential to be used as an "outdoor classroom/natural laboratory" where students can learn about the environment.
- The area is already being used for research/educational opportunities, which will no longer exist if the NWR is not created.

Land Use/Zoning Regulations

- Will land use change in areas owned by the National Park Service after establishment of a refuge?
- Is Hamilton Township changing zoning regulations as a result of the refuge study?

The issues identified were fully considered in developing the objectives and alternatives presented in the Draft EA. To the maximum extent possible, the Service also attempted to anticipate and answer any other potential questions that might arise regarding the biological resources, lands, and their uses, and economy of the Cherry Valley area, and the potential impact that refuge creation and operation would have on these features.

6.4 Public Review and Comment on Draft EA

On October 31, 2008, the Service announced the availability of the Draft Cherry Valley National Wildlife Refuge Feasibility Study and Environmental Assessment (and supporting documents) for public review and comment until December 5, 2008. Simultaneously, the Service also announced that two public meetings would be held November 19 and 20 to receive additional public input on these documents, as well as on the agency's preference for the 20,466-acre Diverse Habitat Complex Alternative (Alternative B) for a future Cherry Valley National Wildlife Refuge.

As seen during scoping, there continues to be broad public, agency, and organization support for creation of a National Wildlife Refuge in Cherry Valley, and for selection of Alternative B as the agency's final action. Most of the questions asked and concerns expressed during the public comment period and second round of public meetings were similar to those raised during scoping, and the Final EA reflects our additional review and revision, as necessary, to ensure that all comments have been considered and questions answered.

The comments on the Draft EA that were submitted or presented during this period, and agency responses to these comments, are summarized in Appendix G. A complete administrative record for the feasibility study and environmental assessment is on file with the Regional Chief, National Wildlife Refuge System, U.S. Fish and Wildlife Service, located at 300 Westgate Center Drive, Hadley, MA 01035.

Glossary

adsorb: to gather (a gas, liquid, or dissolved substance) on a surface in a condensed layer

alluvium: a deposit of sand, mud, etc., formed by flowing water. The sedimentary matter deposited within recent times, especially in the valleys of large rivers.

alternative: a reasonable way to fix an identified problem or satisfy a stated need [40 CFR 1500.2]

Appalachian Flyway: is a migratory route for birds that extends along the Appalachian Mountains

apiary: a place where bees and beehives are kept, especially a place where bees are raised for their honey

appropriate use: a proposed or existing use on a refuge that meets at least one of the following three conditions:

1. The use is a wildlife-dependent use.
2. The use contributes to fulfilling the refuge purpose(s), the National Wildlife Refuge 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.
3. The use has been determined to be appropriate as specified in section 1.11 of the National Wildlife Refuge System Improvement Act.

approved acquisition boundary: a project boundary that the Director of the U.S. Fish and Wildlife Service (Service) approves upon completion of the planning and environmental compliance process. An approved acquisition boundary only designates those lands that the Service has authority to acquire or manage through various agreements. The approval of an acquisition boundary does not grant the Service jurisdiction or control over lands within the boundary and it does not make lands within the boundary part of the National Wildlife Refuge System (Refuge System). Lands do not become part of the Refuge System until the Service buys them or they are placed under an agreement that provides for their management as part of the Refuge System.

aquifer: a formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Atlantic Flyway: is a migratory route for birds that extends from the offshore waters of the Atlantic Coast west to the Allegheny Mountains where, curving northwestward across northern West Virginia and northeastern Ohio, it continues in that direction across the prairie provinces of Canada and the Northwest Territories to the Arctic Coast of Alaska (http://www.birdnature.com/flyways.html).

biological diversity (or biodiversity): the variety of life and its processes, including 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

biotic: Of or having to do with life or living organisms. Produced or caused by living organisms.

bog: a poorly drained area rich in plant residues, usually surrounded by an area of open water, and having characteristic flora; a type of peatland.

buffer (or buffer area): land bordering and protecting critical habitat or water bodies by reducing runoff and nonpoint source pollution input; areas created or sustained to lessen negative effects of land development on animals, plants, and their habitats.

calcareous: Composed of, containing, or characteristic of calcium carbonate, calcium, or limestone; chalky.

carbon sequestration: the provision of long-term storage of carbon in the terrestrial biosphere, underground, or the oceans so that the buildup of carbon dioxide (the principal greenhouse gas) concentration in the atmosphere will reduce or slow.

carnivore: An animal that feeds chiefly on the flesh of other animals.

catadromous: an organism that spends most of its life growing and maturing in freshwater, but migrates to saltwater to reproduce.

categorical exclusion: 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]

circumneutral soils: soils with pH values near neutral (i.e., near pH 7).

colluvium: a loose deposit of rock debris accumulated through the action of gravity at the base of a cliff or slope.

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 [of the U.S. Fish and Wildlife Service], will not materially interfere with or detract from the fulfillment of the mission of the [National Wildlife Refuge] System or the purposes of the refuge." – National Wildlife Refuge System Improvement Act of 1997 [Public Law 105-57; 111 Stat. 1253]

compatibility determination: the process in which a wildlife-dependent use or any other public use on a refuge is found to be compatible or incompatible with the fulfillment of the National Wildlife Refuge System mission or the purposes of the refuge. This determination is a requirement for wildlife-dependent uses or any other public uses on a refuge.

compatibility policy: "The refuge manager will not initiate or permit a new use of a national wildlife refuge or expand, renew, or extend an existing use of a national wildlife refuge unless the refuge manager has determined that the use is a compatible use." [Service Manual 603 FW 2.3]

Comprehensive Conservation Plan (CCP): Mandated by the National Wildlife Refuge System Improvement Act of 1997, a document that provides a description of the desired future conditions and long-range guidance for the refuge manager to accomplish purposes of the Refuge System and the refuge. CCPs establish management direction to achieve refuge purposes. [Public Law 105-57; Service Manual 602 FW 1.6]

Cumulative impact: according to NEPA, the impact on the environment which results from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Delaware River Basin: The Delaware is the longest un-dammed river east of the Mississippi, extending 330 miles from the confluence of its East and West branches at Hancock, N.Y. to the mouth of the Delaware Bay where it meets the Atlantic Ocean. In all, the basin contains 13,539 square miles, draining parts of Pennsylvania; New Jersey; New York; and Delaware. Included in the total area number is the 782 square-mile Delaware Bay.

Delaware Water Gap: geological formation formed by water. The Gap is a mile wide, and extends from New Jersey's Mount Tammany to Pennsylvania's Mount Minsi. It is about 1200 feet deep from the tops of the mountains to the surface of the Delaware River.

diurnal: occurring or active during the daytime rather than at night

easement: an agreement by which landowners give up or sell one of their rights on their property [e.g., landowners may donate rights of way across properties]. It is a non-possessory interest in a real property owned by another imposing limitations or affirmative obligations with the purpose of returning or protecting the property's conservation values.

ecology: the branch of biology dealing with the relations and interactions between organisms and their environment, including other organisms

ecosystem: a community of organisms together with their physical environment, viewed as a system of interacting and interdependent relationships and including such processes as the flow of energy and the cycling of nutrients through living and nonliving components of the system

emergent wetland: wetlands dominated by erect, rooted, herbaceous plants

endangered species: a species legally protected under the federal Endangered Species Act or a state Endangered Species Act that is in danger of becoming extinct throughout all or a significant portion of its range

Endangered Species Act of 1973 as amended (ESA): The Endangered Species Act (ESA) provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. protects plants and animals that are listed by the federal government as "endangered" or "threatened." ESA § 9 makes it unlawful for anyone to "take" a listed animal, and this includes significantly modifying its habitat. This applies to private parties and private land. Section 7 applies to federal agencies, and requires federal agencies to ensure that their actions (including permitting) are not likely to jeopardize the continued existence of a listed species (plant or animal) or result in the destruction or modification of critical habitat (i.e., "take"). [16 U.S.C. 1531-1544, as amended, Public Law 93-205]

Environmental Assessment (EA): a concise public document, prepared in compliance with the National Environmental Policy Act (NEPA), that discusses the purpose and need for an action, alternatives that were considered, and provides sufficient evidence and analysis of the action's effects to determine whether it is necessary

to prepare an Environmental Impact Statement (see immediately below) or a Finding of No Significant Impact (FONSI) [40 CFR 1508.9].

Environmental Impact Statement (EIS): a detailed, written analysis of the environmental effects of a proposed action, adverse effects of the project that cannot be avoided, alternative courses of action, short-term uses of the environment versus the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources [40 CFR 1508.1 1]

federally-listed species: a species listed as either endangered or threatened, or a species at risk under the federal Endangered Species Act of 1973 (as amended)

federal trust species: species that the federal government holds in trust (i.e., is responsible for looking after) for the people through law or administrative act, this includes migratory birds, federally-threatened or endangered species, interjurisdictional fish, marine mammals, and other species of concern [16 U.S.C. 3772]

fee title: is a real estate term that means the type of ownership giving the owner the maximum interest in the land, entitling the owner to use the property in any manner consistent with federal, state and local laws and ordinances

fen: low land covered wholly or partially with water; boggy land; a marsh

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]

forbs: a broad-leaved herb (i.e., other than a grass), especially one growing in a field, prairie, or meadow

glacial drift: sediment that has been deposited by a glacier

glacial groove: scratches or gouges cut into bedrock by process of glacial abrasion

glacial outwash: glacial drift deposited away from the glacier by meltwater streams coming from the glacier

glacial striae: scratches, commonly parallel, on smooth rock surfaces due to glacial abrasion

glacial till: sand, pebbles, and boulders deposited by a glacier

graminoid species: grasses and grasslike plants such as sedges and rushes

Great Appalachian Valley: a chain of valley lowlands that stretches about 700 miles from Canada to Alabama and has been an important north-south route of travel since prehistoric times

groundwater: the water beneath the surface of the ground, consisting largely of surface water that has seeped down: the source of water in springs and wells.

habitat: the area or natural environment in which an organism or population normally lives. A habitat is made up of physical factors such as soil, moisture, range of temperature, and availability of light as well as biotic factors such as the availability of food and the presence of predators.

hibernacula: the shelter of a hibernating animal

hydrology: The scientific study of the properties, distribution, and effects of water as a liquid, solid, or gas on the Earth's surface, in the soil and underlying rocks, and in the atmosphere.

insectivore: an organism that feeds mainly on insects

interjurisdictional fish: populations of fish that are managed by two or more states or national or tribal governments because of the scope of their geographic distributions or migrations

issue: any unsettled matter that requires a management decision, e.g., an initiative, opportunity, resource management problem, threat to the resources of the unit, conflict in uses, public concern, or the presence of an undesirable resource condition [FWS Manual 602 FW 1.6]

kame: a small hill or ridge consisting of layers of sand and gravel deposited by a meltwater stream at the margin of a melting glacier

kettle holes: kettles form in glacial drift when glacial ice (ice block) melts and leaves a usually steep-sided, generally circular depression, which may or may not fill with water

lagomorph: any member of the family of mammals generally known as rabbits, hares, or the less common pikas

Land Protection Plan (LPP): a document that identifies and prioritizes lands for potential U.S. Fish and Wildlife Service acquisition from a willing seller, and also

describes other methods of providing protection (e.g., easements). This document is released with environmental assessments.

marsupial: group of mammals whose young are born in an immature state. Females usually carry and nurse their young in pouches or in a pouch-like area on their abdomens.

mesic: of, pertaining to, or adapted to an environment having a balanced supply of moisture

millage rate: (also known as the tax rate) is a figure applied to the value of a property to calculate the property tax liability. One "mill" is one dollar of tax on every thousand dollars of taxable value.

National Environmental Policy Act of 1979 (NEPA): requires all agencies, including the U.S. Fish and Wildlife Service, to examine the environmental impacts of their actions, incorporate environmental information, and utilize public participation in the planning and implementation of all actions. Federal agencies must integrate NEPA with other planning requirements and prepare appropriate NEPA documents to facilitate better environmental decision making. NEPA requires federal agencies to review and comment on federal agency environmental plans and documents when the agency has jurisdiction by law or special expertise with respect to the environmental impacts involved. [42 U.S.C. 4321-4327] [40 CFR 1500-1508]

National Wildlife Refuge (refuge). "A designated area of land, water, or an interest in land or water within the Refuge System, but does not include Coordination Areas." [Service Manual 603 FW 2.5 N]

National Wildlife Refuge System (Refuge System): "All lands, waters, and interests therein administered by the U.S. Fish and Wildlife Service as wildlife refuges, wildlife ranges, wildlife management areas, waterfowl production areas, coordination areas, and other areas for the protection and conservation of fish and wildlife including those that are threatened with extinction as determined in writing by the Director or so directed by Presidential or Secretarial order. The determination by the Director may not be delegated." [Service Manual 603 FW 2.5 I]

passerines: perching birds -- technically members of the taxonomic order Passeriformes. Birds in this order are characterized by having four toes, three directed forward and one backward, all joining the foot at the same level. Roughly 60 percent of all bird species are passerines. Song birds are included in this group.

physiographic province: a landform region, an area delineated according to similar terrain that has been shaped by a common geologic history

Pocono Glaciated Plateau: the Pocono Glaciated Plateau is bounded on all sides by escarpments that rise to between 1,800 and 2,300 feet in Monroe, Pike, Carbon, Lackawanna, and Luzerne counties. The plateau features numerous lakes, ponds, bogs, and glacial till that are legacies from the Wisconsinan glaciation.

postmold holes: Posthole is the cavity created when a hole is dug for a support post; and postmold is the filling of that cavity by a post and the backfill used to keep the timber in place. Over time, the wood decays and leaves a patch of earth that differs in color and texture from the surrounding soil.

preferred action: Of the alternative evaluated under NEPA, the preferred action is the alternative the Service is recommending as the preferred alternative for final approval and action.

proposed action: according to NEPA, a plan that contains sufficient details about the intended actions to be taken, or that will result, to allow alternatives to be developed and the environmental impacts analyzed [40 CFR 1508.23]

propagules: any of various usually vegetative portions of a plant that can give rise to a new individual, such as corms, tubers, offsets, or runners. Seeds and spores are also propagules.

public use: any of the many activities that individuals, organizations, non-governmental groups; officials of federal, state, and local agencies, Native American tribes, and foreign nations, may want to engage in on refuge land.

rodent: any of various very numerous, mostly small mammals of the order Rodentia, having large front teeth used for gnawing. Rodents make up about half the living species of mammals, and include rats, mice, beavers, squirrels, lemmings, shrews, and hamsters.

raptor: a bird of prey, such as a hawk, eagle, or owl

residuum: weathered bedrock; found predominately in the Highlands and Piedmont provinces; soil textures dependent on type of rock from which the soil is weathered

Ridge and Valley Province: one of the six physiographic provinces in Pennsylvania. It occupies much of central and northeastern Pennsylvania and encompasses parts of the following counties: Monroe, Northampton, Lehigh, Berks, Lebanon, Dauphin, Cumberland, Franklin, Fulton, Bedford, Huntingdon, Blair, Centre,

Clinton, Mifflin, Juniata, Perry, Northumberland, Union, Lycoming, Columbia, Luzerne, Carbon, Schuylkill, and Montour.

riparian: relating to or inhabiting the banks of a natural course of water

second order stream: the smallest streams in a drainage network have no tributary streams. These are called first order streams. Two first order streams unite to form a second order stream. Second order streams only have two or more first-order streams as tributaries.

Shawangunk Formation: a mapped bedrock unit in eastern Pennsylvania, New Jersey, and New York. It is named for the Shawangunk Ridge for which it is the dominant rock type.

silviculture: the care and cultivation of forest trees; forestry.

species of special management concern: this is an informal term commonly used to refer to species that are declining or appear to be in need of conservation efforts. Many entities, including state agencies and non-governmental organizations, maintain lists of at-risk species. These species would then fall within this category.

Study Act: the 109th Congress successfully passed a bill to study Cherry Valley for potential inclusion into the National Wildlife Refuge System. The bill was passed as the Cherry Valley National Wildlife Refuge Study Act of 2006, Title VI of H.R. 4957 (Public Law No.: 109-363). This act requires the Secretary of the Department of the Interior to submit a report containing the results of the study to the Committee on Resources, U.S. House of Representatives, and to the Committee on Environment and Public Works, U.S. Senate. The report is to include: 1) a map that identifies and prioritizes specific lands, waters, and interests therein for future acquisition, and that delineates an acquisition boundary, for a potential Cherry Valley NWR, 2) a cost estimate for the acquisition of all lands, waters, and interests therein that are appropriate for refuge status, and 3) an estimate of potentially available acquisition and management funds from non-federal sources.

Study Area: The Cherry Valley National Wildlife Refuge Study Act identified a 30,000 acre area of land that should be studied for potential inclusion in the National Wildlife Refuge System. The U.S. Fish and Wild life Service identified an additional 1,500 acres that we deemed appropriate to include in the study as well. We refer to the combined 31,500 acre area as the Study Area in this document.

succession: the gradual replacement of one type of ecological community by another in the same area, involving a series of orderly changes, especially in the dominant vegetation

talus slopes: an accumulation of rock debris at the base of a cliff or steep mountain slope

terminal moraine: a terminal, or end, moraine consists of a ridge-like accumulation of glacial debris pushed forward by the leading edge of a glacier and dumped at the outermost edge of any given ice

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Appendix A

Cherry Valley National Wildlife Refuge
Study Act of 2006

TITLE VI—CHERRY VALLEY NATIONAL WILDLIFE REFUGE

SEC. 601. SHORT TITLE.

This title may be cited as the ''Cherry Valley National Wildlife Refuge Study Act''.

SEC. 602. FINDINGS.

The Congress finds the following:

(1) The scenic Cherry Valley area of Northeastern Pennsylvania is blessed with more than 80 special-concern animal and plant species and natural habitats.

(2) In a preliminary assessment of Cherry Valley, United States Fish and Wildlife Service biologists ranked Cherry Valley very high as a potential national wildlife refuge.

(3) Six species that are listed as endangered species or threatened species under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) have been documented within or near Cherry Valley: The bog turtle (possibly the most significant population of the listed subspecies), the dwarf wedge mussel, the northeastern bulrush, the small whorled pogonia, the bald eagle, and the Indiana bat (a historic resident, with efforts underway to re-establish favorable conditions).

(4) Cherry Valley provides habitat for at least 79 species of national or regional concern, which either nest in Cherry Valley or migrate through the area during critical times in their life cycle, including—

(A) neo-tropical migratory birds such as the Cerulean Warbler, the Worm-eating Warbler, and the Wood Thrush, all of which nest in Cherry Valley;

(B) waterfowl such as the American Black Duck;

(C) several globally rare plants, such as the spreading globeflower; and

(D) anadromous fish species.

(5) The Cherry Valley watershed encompasses a large segment of the Kittatinny Ridge, an important migration route for birds of prey throughout the Northeastern United States. Every migratory raptor species in the Northeast is regularly observed along the Kittatinny Ridge during the autumnal migration, including the bald eagle, the golden eagle, and the broad-winged hawk.

(6) The Kittatinny Ridge also includes a long segment of the Appalachian Trail, a nationally significant natural-cultural-recreational feature.

(7) Many of the significant wildlife habitats found in the Cherry Valley, especially the rare calcareous wetlands, have disappeared from other localities in their range.

(8) Ongoing studies have documented the high water quality of Cherry Creek.

(9) Public meetings over several years have demonstrated strong, deep, and growing local support for a Cherry Valley National Wildlife Refuge, as demonstrated by the following:

(A) Area landowners, business and community leaders, media, and elected officials have consistently voiced their enthusiasm for a Cherry Valley National Wildlife Refuge.

(B) Numerous local communities and public and private conservation entities share complementary goals for protecting Cherry Valley and are energetically conserving wildlife habitat and farmland. Along with State landmanagement agencies and the National Park Service, these local entities represent potential strong partners for the United States Fish and Wildlife Service, and view a Cherry Valley National Wildlife Refuge as a complement to existing private, county, municipal, and State efforts.

(C) A number of local landowners have already put their land into conservation easements or other conservation arrangements.

(D) A voter-approved Monroe County Open Space Fund and a voter-approved Stroud Township municipal land conservation fund have contributed to many of these projects.

(10) Two federally owned parcels of land are contiguous to the area to be studied under this title as for acquisition and inclusion in a future Cherry Valley National Wildlife Refuge: The Delaware Water Gap National Recreation Area and a 700-acre segment of the Appalachian Trail owned by the National Park Service.

SEC. 603. STUDY OF REFUGE POTENTIAL AND FUTURE REFUGE LANDACQUISITION.

(a) STUDY.—The Secretary shall initiate within 30 days after the date of the enactment of this Act a study to evaluate the fish and wildlife habitat and aquatic and terrestrial communities located in Northeastern Pennsylvania and identified on the map entitled, ''Proposed Cherry Valley National Wildlife Refuge— Authorization Boundary'', dated February 24, 2005, for their potential acquisition by the United States Fish and Wildlife Service through donation, exchange, or willing seller purchase and subsequent inclusion in a future Cherry Valley National Wildlife Refuge.

(b) CONSULTATION.—The Secretary, while conducting the study required under this section, shall consult appropriate State and local officials, private conservation organizations, major landowners and other interested persons, regarding the identification of eligible lands, waters, and interests therein that are appropriate for acquisition for a national wildlife refuge and the determination of boundaries within which such acquisitions should be made.

(c) COMPONENTS OF STUDY.—As part of the study under this section the Secretary shall do the following:

(1) Determine if the fish and wildlife habitat and aquatic and terrestrial communities to be evaluated are suitable for inclusion in the National Wildlife Refuge System and management under the policies of the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd et seq.).

(2) Assess the conservation benefits to be gained from the establishment of a Cherry Valley National Wildlife Refuge including—

(A) preservation and maintenance of diverse populations of fish, wildlife, and plants, including species listed as threatened species or endangered species;

(B) protection and enhancement of aquatic and wetland habitats;

(C) opportunities for compatible wildlife-dependent recreation, scientific research, and environmental education and interpretation; and

(D) fulfillment of international obligations of the United States with respect to fish, wildlife, and their habitats.

(3) Provide an opportunity for public participation and give special consideration to views expressed by local public and private entities regarding lands, waters, and interests therein for potential future acquisition for refuge purposes.

(4) The total area of lands, water, and interests therein that may be acquired shall not in the aggregate exceed 30,000 acres.

(d) REPORT.—The Secretary shall, within 12 months after date of the enactment of this Act, complete the study required by this section and submit a report containing the results thereof to the Committee on Resources of the House of Representatives and the Committee on Environment and Public Works of the Senate. The report shall include—

(1) a map that identifies and prioritizes specific lands, waters, and interests therein for future acquisition, and that delineates an acquisition boundary, for a potential Cherry Valley National Wildlife Refuge;

(2) a cost estimate for the acquisition of all lands, waters, and interests therein that are appropriate for refuge status; and

(3) an estimate of potentially available acquisition and management funds from non-Federal sources.

(e) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to the Secretary $200,000 to carry out the study.

SEC. 604. DEFINITIONS.

In this title the term ''Secretary'' means the Secretary of the Interior acting through the Director of the United States Fish and Wildlife Service.

Appendix B

FINAL
Conceptual Management Plan for a
Proposed Cherry Valley National Wildlife Refuge

Table of Contents

Introduction

The proposed Cherry Valley National Wildlife Refuge lies approximately 60 miles northwest of New York City, and 60 miles north of Philadelphia, Pennsylvania, in the southeastern section of Monroe County, Pennsylvania and northeastern Northampton County, Pennsylvania. If established, a refuge would protect a combination of wetland and upland habitat supporting several nationally-rare ecosystems. The area is home to several federally-listed threatened or endangered species, a wealth of migratory birds, and numerous plant and animal species listed as threatened or endangered by the Commonwealth of Pennsylvania. It is recognized as one of the most unique and important areas for the federally-listed, threatened bog turtle (*Clemmys [Glyptemys] muhlenbergii*), and is a key corridor for migrating raptors and other migratory birds. Unique habitats of the valley include mid-Atlantic calcareous fens, the Kittatinny Ridge, pitch pine/scrub oak barrens, kettle hole bogs and caves, and Cherry Creek. Cherry Valley contains large contiguous blocks of wildlife habitat including riparian corridors, ponds, emergent marshes, fens, scrub-shrub wetlands, wooded swamps, mixed hardwood upland forests, grasslands, and farmlands. Should the preferred action to establish a Cherry Valley National Wildlife Refuge move forward, the refuge would be comprised of up to 20,466 acres of wildlife habitat that is protected, in perpetuity through fee acquisition or by conservation easements.

This document, the final Conceptual Management Plan (CMP), provides further detail on the U.S. Fish and Wildlife Service's (Service, we, our) preferred action and how the lands identified therein would be administered should a refuge be established in Cherry Valley.

Purpose of Conceptual Management Plan

The Final Cherry Valley Feasibility Study and Environmental Assessment (Final EA) examines the feasibility of establishing a national wildlife refuge (refuge; NWR) in Cherry Valley, Pennsylvania. In Chapter 3 of the Study Report, three Alternatives are described and considered for a potential refuge, with Alternative B (Diverse Habitat Complex) presented as the Service's preferred action. This alternative will not be implemented until it has been officially reviewed and authorized.

If approved, Alternative B, the "Diverse Habitat Complex" alternative, would create an acquisition boundary of up to 20,466 acres within the 31,500 acre study area, containing portions of 13 of Cherry Valley's and ridge's defined ecosystems (for more specific information see Chapter 3 of the Final EA). Acquisition of lands would be done through fee title (about 50 percent of the acres) and conservation easements (about 50 percent of the acres). The Service concludes that acquiring these habitat areas over time would provide the protection of rare and unique habitats envisioned by the Study Act and the coalition of organizations and individuals that advocate the consideration of a refuge in

the valley. It would also provide ample opportunities for wildlife-dependent recreation, new and dynamic partnerships, and scientific research.

The Service developed this CMP to describe the management direction for a proposed Cherry Valley National Wildlife Refuge, as defined in Alternative B, and outline possible interim habitat management priorities and compatible public uses on newly acquired lands, should a refuge be approved. The activities described in this CMP will direct the way we pursue and manage acquisitions, conservation easements, and other land interests until a Comprehensive Conservation Plan (CCP) is developed. By Service policy, a CCP must be developed within 15 years of the actual establishment of the refuge (i.e., acquisition of first land parcel). Any major changes in the activities described in this CMP, any new activities, and our development of the CCP would be subject to public review and comment in accordance with the provisions of Service refuge planning policy (602 FW 1, 2 and 3) and Service and U.S. Department of the Interior policy implementing the National Environmental Policy Act (NEPA) of 1969 (Department of Interior Manual 516, Appendix 1).

Mission of the Service and the National Wildlife Refuge System

The mission of the Service is working with others to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. As part of the Department of the Interior, we manage all refuges within the National Wildlife Refuge System (Refuge System), as well as 66 national fish hatcheries, 78 ecological services field stations, and 64 fish and wildlife assistance offices. We also enforce federal wildlife laws, honor international treaties, assist foreign governments in their conservation efforts, and oversee the Wildlife and Sport Fish Restoration Program (formerly known as Federal Assistance), which distributes hundreds of millions of dollars from excise taxes on fishing and hunting equipment to state fish and wildlife agencies.

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. The Refuge System now comprises over 100 million acres on more than 548 national wildlife refuges and 3,000 waterfowl production areas. More than 40 million visitors each year participate in such outdoor pursuits as hunting, fishing, wildlife observation and photography, and environmental education and interpretation on refuge lands. Lands acquired through conservation easements, partnerships, etc. are managed as part of the Refuge System.

Background and Rationale for the Establishment of a Cherry Valley NWR

Pennsylvania's Cherry Valley is rich in natural resources and wildlife diversity. Cherry Valley is largely defined by Cherry Creek which flows through southern Monroe County in northeastern Pennsylvania, and into the Delaware River. For generations, local

landowners and conservation organizations safeguarded the valley's clean waters and important natural communities. However, recent rapid residential and commercial growth in Monroe County, has outpaced efforts to protect these resources. The county is within a two-hour drive of 25 million people.

The community took action several years ago to encourage permanent protection of Cherry Valley as part of the Refuge System. As a result, U.S. Representatives Paul Kanjorski (D-11th) and Charles Dent (R-15th) co-sponsored a bill to study the area for potential inclusion in the Refuge System. The 109th U.S. Congress passed the Cherry Valley National Wildlife Refuge Study Act (Study Act) in 2006. The Study Act directs the Service to evaluate the biological value of natural communities within Cherry Valley to determine if the area merits protection as a refuge. To facilitate the study, the Service convened a Cherry Valley Study Team (CVST). The CVST includes members from the Service, The Nature Conservancy, Pennsylvania Game Commission, Pennsylvania Fish and Boat Commission, Pennsylvania Natural Heritage Program, Monroe County conservation and planning administrators, National Park Service, and local academic institutions including Northampton County Community College and East Stroudsburg University. The CVST held an initial meeting in October 2007 and met regularly during the preparation of the planning documents.

The 31,500-acre study area harbors nationally significant ecosystems and many protected plants and animals, including federally listed threatened and endangered species. Species of concern documented to be present in the refuge Study Area include bog turtle[1], northeastern bulrush[2], and American eel[3]. A historical record for Indiana bat[2], in conjunction with appropriate summer foraging and roosting habit, and the proximity of bat hibernacula, are strong indicators that the species may still be represented in the valley. Dwarf wedgemussel[2], striped bass[3], and American shad[3], are documented to be present nearby in the Delaware River. There is a historical record for small-whorled pogonia[1] that is thought to be within or near Cherry Valley, and appropriate habitat for this species does occur within the valley. Although it is uncertain if dwarf wedgemussel occurs in Cherry Creek, and striped bass and American shad likely do not, all three species are aided in the Delaware basin by clean, unpolluted water from the Cherry Creek watershed. At a minimum, the Cherry Creek watershed provides a valuable ecological service in this regard. Kittatinny Ridge, following the creek's path, is a major avenue for migrating birds of prey, songbirds, waterfowl and bats. Unique habitats of the valley include mid-Atlantic calcareous fens, Kittatinny Ridge, pitch pine/scrub oak barrens, kettle hole bogs, caves, and Cherry Creek.

In addition to federal trust resources, numerous state-listed, threatened and endangered species inhabit Cherry Valley. This provides a unique opportunity for

[1] Federally listed under the Endangered Species Act as threatened
[2] Federally listed under the Endangered Species Act as endangered
[3] Federal interjurisdictional fish

partnering with state agencies and local conservation groups for the preservation of additional species and habitats. The synergy of these partnerships will allow us to better protect the federal resources that are present.

Laws Guiding the National Wildlife Refuge System

A number of laws, policies and regulations, including the following, govern our acquisition and management of land in the Cherry Valley.

National Wildlife Refuge System Improvement Act of 1997 (Refuge Improvement Act). This act guides the development and operation of the Refuge System. It clearly identifies the mission of the Refuge System, requires the Secretary of the Interior to maintain the biological integrity, diversity and environmental health of refuge lands, mandates a "wildlife first" policy on refuges, and requires comprehensive conservation planning. It also designates six wildlife-dependent recreational uses as priority public uses of the Refuge System: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. This act amended the National Wildlife Refuge System Administration Act of 1966, which continues to serve as the parent legislation for the Refuge System.

National Wildlife Refuge System Administration Act of 1966. This act defines the Refuge System, including refuges, areas for the protection and conservation of fish and wildlife threatened with extinction, wildlife ranges, wildlife management areas, and waterfowl production areas. It also authorizes the Secretary of the Interior to permit any use of an area, provided the use is compatible with the major purposes for establishing the area.

Migratory Bird Treaty Act. The Migratory Bird Treaty Act protects all migratory birds and their parts (including eggs, nests, and feathers) from illegal trade. The Migratory Bird Treaty Act is a domestic law that acknowledges the United States' involvement in four international conventions (with Canada, Japan, Mexico, and Russia) for the protection of a shared migratory bird resource. The bird resource is considered shared because these birds migrate between countries at some point during their annual life cycle.

Endangered Species Act (ESA) of 1973 (as amended). This act directs all federal agencies to participate in endangered species conservation by protecting endangered and threatened species and restoring them to a secure status in the wild. Section 7 of the act charges federal agencies to aid in the conservation of species listed as threatened or endangered under the ESA, and requires federal agencies to ensure that their activities will not jeopardize the continued existence of ESA-listed species or adversely modify designated, critical habitats.

National Environmental Policy Act of 1969 (NEPA). NEPA requires that all federal agencies consult fully with the public in planning any action that may significantly affect the quality of the human or natural environment. The Final EA that this document accompanies is formatted to assist the Service in complying with NEPA if the proposed refuge moves forward.

Land and Water Conservation Act. The Land and Water Conservation Fund uses monies 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 (primarily Outer Continental Shelf oil monies) to fund matching grants to states for outdoor recreation projects and to fund land acquisition for various federal agencies.

Migratory Bird Conservation Act. The Migratory Bird Conservation Act provides for the acquisition of suitable habitats for use as migratory bird refuges, and the administration, maintenance, and development of these areas, under the administration of the Secretary of the Interior.

Archeological Resources Protection Act of 1979 (ARPA). ARPA provides protection for archeological resources on public lands by prohibiting the "excavation, removal, damage or defacing of any archeological resource located on public or Indian lands," and sets up criminal penalties for those acts. It also encourages the increased cooperation and exchange of information between governmental authorities, the professional archeological community, and private individuals having archeological resources or data obtained before 1979.

National Historic Preservation Act of 1966 (NHPA). NHPA requires all federal agencies to consider the effects of their undertaking on properties meeting criteria for the National Register of historic places, and ensures that historic preservation fully integrates into the ongoing programs and missions of federal agencies.

Purpose of Establishment and Land Acquisition Authority

Refuge lands can be acquired under various legislative and administrative authorities for specified purposes. Land acquisition for the proposed Cherry Valley National Wildlife Refuge would be authorized by the Endangered Species Act of 1973, Fish and Wildlife Act of 1956, the Migratory Bird Conservation Act of 1929, the Refuge Recreation Act of 1962 and Emergency Wetland Resources Act of 1986.

The purposes of a refuge are derived from the legislative authorities under which it was established. The purposes guide the long term management of the refuge, prioritize future land acquisition, and play a key role in determining the compatibility of proposed public uses. The purposes of the Cherry Valley National Wildlife Refuge as proposed in the Study Report called for by the Cherry Valley National Wildlife Refuge Study Act of 2006 would include:

"to conserve (A) fish or wildlife which are listed as endangered species or threatened species…or (B) plants…" 16 U.S.C. §1534 (Endangered Species Act of 1973), and

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

"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), and

"for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..." 16 U.S.C. §742f(b)(1) (Fish and Wildlife Act of 1956).

Based on these purposes, the following sections provide more detail on the overall management focus of the refuge.

(1) Management, advancement, conservation, and protection of federally threatened and endangered species.

Bog turtle

The Bog Turtle (*Clemmys muhlenbergii*) Northern Population Recovery Plan (USFWS 2001) identifies eastern Pennsylvania as a stronghold of this federally-listed, threatened species. The area encompassed by the proposed Cherry Valley National Wildlife Refuge includes numerous documented bog turtle wetlands where the species is thriving, and other wetlands where turtles are present but the habitat is in need of restoration. A number of important partnerships between the Service's Partners for Fish and Wildlife program, The Nature Conservancy, the Pocono Heritage Land Trust, private landowners, and others have resulted in the protection of some of these wetlands, as well as successful bog turtle habitat restoration projects throughout the valley. The proposed refuge will continue and expand upon these partnerships and management opportunities.

Bog turtles live in spring-fed wetlands throughout the Cherry Valley and the existing riparian corridor along Cherry Creek and its tributaries provide good habitat connectivity for this species as well as other species of concern. Although some of the wetlands are in a sense protected due to conservation-focused easements and ownerships, many such wetlands remain unprotected and are therefore in peril. An additional challenge is that springs that provide water to these wetland systems have their genesis on the ridge and mountain slopes that flank the Cherry Valley to the north and south. Unfortunately,

only a small amount of these forested slopes is protected. This is of great concern because development or other alterations here would jeopardize the hydrologic link that supports the valley wetlands and the unique assemblage of species that inhabit them. The Service's preferred action seeks to protect the wetlands, slopes and riparian corridor areas of Cherry Valley.

We recognize that various refuge activities associated with general maintenance and operations have the potential to adversely affect bog turtles and their habitat. Such activities may include, but are not limited to, road, building, parking area and trail construction and maintenance. Future activities that have the potential to adversely affect bog turtles will be carefully planned to ensure adverse effects are avoided.

As part of the Service's management activities, we may manage or restore bog turtle habitat for the benefit of this species. While these activities have an overall beneficial effect on bog turtle populations, some adverse effects to individual turtles may occur. Consequently, all habitat management and restoration activities in known or potential bog turtle habitat will be conducted in accordance with the Northeast Region's intra-Service Biological Opinion (BO) dated March 10, 2006 entitled "Effects of the Implementation of Habitat Restoration Projects on the Northern Population of the Bog Turtle." Any management or restoration activities in bog turtle habitat that are not covered by the BO will be addressed in a separate consultation, as needed.

Recognizing bog turtles are also threatened by illegal collection and trade, the Service will work with partners, including the Pennsylvania Fish and Boat Commission and local landowners, to address this threat. Protection measures may include, but are not limited to, establishment of neighborhood watch networks, controlling access to bog turtle habitat, and increased surveillance by local, State, and federal agency personnel.

Indiana Bat

Indiana bats (*Myotis sodalis*) were once known to occur in the Cherry Valley region of eastern Pennsylvania based on historic records from Hartman's Cave. Currently, two hibernacula are known within close proximity to Cherry Valley and are located in historic mines at Hibernia and Mount Hope, New Jersey, approximately 35 miles away. A thriving summer population of Indiana bats is found at Great Swamp National Wildlife Refuge, approximately 15 miles from these hibernacula sites. During the spring and summer, these bats make their way to the Great Swamp for foraging, and birthing and rearing of young. The habitat at the Great Swamp that supports this activity consists of large dead snags and dying trees that lie within close proximity to open marshes and stream corridors. Based on the proximity of the Cherry Valley region to the hibernacula sites, as well as the presence of high quality summer habitat consistent with that observed at the Great Swamp NWR, and the historical records of Indiana bats in Cherry Valley, there is a high likelihood that the species is present there during the summer months. In addition, there is also a high likelihood that wintering populations could be

restored to the area if Hartman's Cave and other potential hibernacula sites are protected from disturbance.

The best potential habitat for the Indiana bat in Cherry Valley, aside from the historical hibernaculum at Hartman's Cave, would be forested uplands, wetlands, and riparian corridors, particularly forests or woodlots with large dead and dying snags for roosting. If the refuge is established, future management of the refuge to retain and restore appropriate habitat may serve to attract bats to the area and/or expand upon current habitat use. Based on available information, protection and management of appropriate habitat in Cherry Valley has a high potential for aiding in the recovery of this species. Surveys for Indiana bats would take on a high priority at the proposed refuge.

Based on our current understanding of Indiana bat habitat use and habitat characteristics, the following *Forest Management Guidelines* will be implemented in areas known or likely to support Indiana bats. These guidelines are subject to change as new information about the species and its needs becomes available. In locations where bog turtles and Indiana bats co-occur, further consultation will take place to identify site-specific management plans that weigh and address the needs of both species.

FOREST MANAGEMENT GUIDELINES

1. Retain at least 60 to 80% canopy closure within forested stands.

2. Retain all snags, except where they pose a serious human safety hazard due to their location near a building, yard, road or powerline. A tree with less than 10% live canopy should be considered a snag. When possible, delay removal of hazard trees until bats are hibernating (between November 15 and March 31).

3. Do not harvest or manipulate shagbark hickory trees (*Carya ovata*) unless the density of shagbark hickory exceeds 16 trees per acre. If present, maintain at least 16 live shagbark hickory greater than 11" dbh (diameter at breast height) per acre. If there are no shagbark hickory trees greater than 11" dbh to leave, then the 16 live shagbark hickory trees per acre will include the largest specimens in the stand.

4. The following species of trees have been identified as having relatively high value as potential Indiana bat roost trees

   shagbark hickory (*Carya ovata*)
   bitternut hickory (*Carya cordiformis*)
   mockernut hickory (*Carya tomentosa*)
   pignut hickory (*Carya glabra*)
   other hickories (*Carya* spp.)
   silver maple (*Acer saccharinum*)

sugar maple (*Acer saccharum*)
red maple (*Acer rubrum*)
green ash (*Fraxinus pennsylvanica*)
white ash (*Fraxinus americana*)
eastern cottonwood (*Populus deltoides*)
northern red oak (*Quercus rubra*)
scarlet oak (*Quercus coccinea*)
black oak (*Quercus velutina*)
white oak (*Quercus alba*)
chestnut oak (*Quercus prinus*)
slippery elm (*Ulmus rubra*)
American elm (*Ulmus americana*)
black locust (*Robinia pseudoacacia*)

This list is based on review of literature and data on Indiana bat roosting requirements. Other species may be added as they are identified. Other tree species with exfoliating bark, crevices or cavities could also serve as potential roost trees.

5. Retain large-diameter trees, particularly those greater than 18" dbh. Where the density of trees greater than 18" dbh is low (e.g., less than three per acre), retain trees greater than 11" dbh so they will recruit into the larger size classes over time, ensuring an ongoing supply of potential roost trees.

6. No harvest or timber stand improvement activities within 100 feet on both sides of perennial, intermittent or ephemeral streams.

7. Do not cut trees between April 1 and November 15. This corresponds to the Indiana bat reproductive and spring/fall emergence and swarming seasons.

8. Do not carry out prescribed burns in forest habitat between April 1 and November 15.

<u>Other Federally-Listed, Threatened and Endangered Species</u>

Other species of concern documented to be present in the Cherry Valley Area include the federally-listed, endangered northeastern bulrush and a possible historical record of the federally-listed, threatened small-whorled pogonia. There is one known population of northeastern bulrush within the acquisition boundary proposed under Alternative B. Further consultation will occur on individual actions that may affect this species. Dwarf wedgemussel (federally-listed, endangered) is known to occur nearby in the Delaware River. Although it is uncertain if dwarf wedgemussel occurs in Cherry Creek, recent survey efforts in the creek conducted by the Service and Pennsylvania Fish and Boat Commission did not find this species (R. Anderson, US Fish and Wildlife Service, personal communication, 5 August 2008). If the small-whorled pogonia or dwarf wedgemussel

are found in or adjacent to refuge lands, further consultation will occur on individual actions that may affect these species.

(2) Management, advancement, conservation, and protection of other federal trust species, nationally significant ecosystems, unique habitats, and other species of concern present in or supported by Cherry Valley.

Other Federal Trust Species

Striped bass and American shad (interjurisdictional fish) are documented to be present nearby in the Delaware River. Striped bass and American shad likely do not occur in the Cherry Creek, however, these species are aided by clean, unpolluted water coming from tributaries to the Delaware River. At a minimum, the Cherry Creek watershed provides a valuable ecological service in this regard.

The American eel, documented in Cherry Creek, is a catadromous (lives in freshwater, reproduces in the Sargasso Sea) interjurisdictional fish. Because the species was thought to be in decline in some areas, a status review was initiated in 2004 to evaluate if Endangered Species Act protection should be extended to the eel. The Service determined in 2007 that although there was compelling evidence of eel decline in some areas, the overall population is not in danger of extinction nor is it likely to become so in the foreseeable future.

State-Listed Species

In addition to their federal status as threatened or endangered, the bog turtle, Indiana bat, and dwarf wedgemussel are all listed as endangered by the Commonwealth of Pennsylvania. These species are also identified in the Pennsylvania Wildlife Action Plan (WAP) as "Wildlife of Immediate Concern." According to an inventory conducted by The Nature Conservancy and the Pennsylvania Natural Heritage Program, the Cherry Valley area supports up to 19 state-listed, endangered and 13 state-listed, threatened species. At least thirteen of the 37 species identified in the Wildlife Action Plan as Pennsylvania's species of greatest conservation concern are known to occur in the Cherry Valley study area.

Ecosystems of Concern

In addition to the individual species listed above, the Cherry Valley area includes three ecosystems that deserve mention. Open Sedge Fens are located in the valley and are considered to be a National Critically Endangered Ecosystem (Pennsylvania Special Concern). The Kittatinny Ridge is considered to be a National Endangered Ecosystem and is a major migration corridor for birds of prey, waterfowl, and song birds. The Riparian Forest Ecosystem is considered to be a National Threatened Ecosystem, and in Cherry Valley provides habitat and habitat connectivity corridors for a great diversity of wildlife.

Two other imperiled ecosystems, Northern Appalachian Acidic Cliff and Acidic Shrub Swamp, are present in Cherry Valley and are designated as Pennsylvania Special Concern Ecosystems.

(3) Management, advancement, conservation, and protection of migratory birds

Migratory Birds

Cherry Valley lies within the Atlantic Flyway in northeastern Pennsylvania. Numerous migratory colonial water birds, songbirds, raptors, freshwater wetland birds, and waterfowl follow the Kittatinny Ridge as a travel corridor and take refuge, forage, and nest in the forest, scrub-shrub, grassland, and wetland habitats that are found there.

The proposed refuge is located in the Northern Ridge and Valley physiographic area, also called Bird Conservation Area 17 in the Partners in Flight (PIF) Bird Conservation Plan. Roughly 50 percent of the undeveloped areas in the Northern Ridge and Valley physiographic area is forested; another 40 percent is agricultural land consisting primarily of old fields and tracts that remain in agricultural production. The proposed refuge area provides a good mix of habitat types and as such provides potential and documented habitat for numerous PIF priority species including:

- Shrub-Early Successional (golden-winged warbler, American woodcock, field sparrow, eastern towhee, willow flycatcher, brown thrasher, blue-winged warbler, prairie warbler, etc.)

- Deciduous Oak-Hickory and Riparian Forest (cerulean warbler, worm-eating warbler, wood thrush, Louisiana waterthrush, red-headed woodpecker, eastern wood-pewee, scarlet tanager, Kentucky warbler, Baltimore oriole, etc.)

- Agricultural/Grassland (grasshopper sparrow, bobolink, meadowlark, etc.)

- Northern Hardwood-Mixed Forest (eastern wood-pewee, wood thrush, Canada warbler, olive-sided flycatcher, Louisiana waterthrush, scarlet tanager, yellow throated vireo, etc.)

- Freshwater Wetlands (American black duck, wood duck, bald eagle, etc.).

To the best of our knowledge, the majority of these species are well represented. Indeed, Cherry Valley is recognized as a premiere birding location in the Northeast and is commonly traversed by birders, academic classes from local education institutions, and others.

Much of the land already managed or protected in this physiographic area is forested (Delaware Water Gap National Recreation Area, Appalachian Trail corridor, State Game Lands, state forests and parks). The proposed refuge would hold a unique position of

offering a mosaic of habitats that aid a greater diversity of avian species. One of the greatest opportunities in this regard may be the presence of larger non-forested tracts that could be managed for shrubland birds. Scrub-shrub habitat is a high priority in the Northern Ridge and Valley, primarily because it continues to support 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 due to the overall loss of early successional habitats.

The landscape composition around the proposed refuge also presents a great opportunity to make significant contributions to the conservation of grassland birds. Grasslands throughout the physiographic area are being significantly degraded by succession and through colonization of these areas by invasive plant species. The expansion of fast spreading invasive species such as multi-flora rose and autumn olive into grassland habitats very quickly makes these habitats unsuitable for grassland bird species. A well planned and organized invasive species control program would be crucial to grassland management, as well as management of the other habitats at the proposed refuge.

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 comparatively rare. Managing for forested bottomland corridors along the Cherry Creek and its tributaries would constitute a significant contribution to the overall goals for Area 17. Management of forested upland habitat and forested wetland habitats would support nesting interior-forest-dwelling birds of concern.

Management of non-forested wetland habitat would provide spring and fall migratory waterfowl and shorebird habitat. Extensive pockets of suitable waterfowl and shorebird habitat are present along the entire length of the Cherry Creek riparian corridor and elsewhere in Cherry Valley.

(4) Fish and wildlife-oriented recreational opportunities

The Refuge Improvement Act establishes six priority public uses on refuges. Those priority uses depend on the presence, or the expectation of the presence of wildlife. These uses are: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. Although these priority uses must receive our consideration in planning for public use, they also must be compatible with the purpose for which the refuge was established and the mission of the Refuge System. Compatibility determinations, which evaluate the impacts of the use in the context of species or habitats, aid in making those decisions. As lands are acquired in the Cherry Valley, compatibility determinations would be used to decide the public use opportunities that may permitted.

Public use opportunities contribute to the long term protection of wildlife resources by promoting understanding, appreciation and support for wildlife conservation. The six priority public uses would be accommodated where they do not have a significant negative impact on wildlife. All the proposed public use activities are contingent upon availability of staff and funding to develop and implement these programs. We would promote opportunities for volunteers and develop community appreciation and public support for the refuge. We would work with school districts and teachers to develop an environmental education program featuring unique species or communities at the refuge. We would open newly acquired lands for hunting if they can biologically, ecologically, and safely accommodate hunting within state guidelines. Newly acquired lands that traditionally have been hunted would remain open until we have completed our planning process. Before closing any newly acquired lands, we would complete a separate public review process.

An increase in public use would result from the new trails, parking areas, fishing access, interpretive overlooks and observation platforms that would be a part of the preferred action. We would allow public access for day use on many of the newly acquired lands outside the sensitive bog turtle and bird nesting habitats. Generally, we would allow hunting. Any hunting on the refuge would be based on the Commonwealth of Pennsylvania's hunting seasons and consistent the refuge's Annual Hunt Plan. We would allow fishing along Cherry Creek where accessible and appropriate. Working with state and local agencies, we would study the feasibility of converting existing historic logging roads into public use trails. The refuge also would provide interpretive and environmental education programs and increase partnership opportunities to interpret the refuge and the watershed.

The plans for increased public use opportunities may cause concern for refuge neighbors due to the perception that new visitors to the Cherry Valley may have adverse impacts on privacy, traffic, frequency of trespass on non-refuge owned lands, etc. The Service evaluates impacts of public uses, not only to wildlife, but also to neighboring landowners and the local community. This "good neighbor policy" strives to avoid such potential conflicts by careful placement of public use areas and trails, clear posting of refuge boundaries, open communication with our refuge neighbors, and a refuge-based law enforcement presence. In the absence of a refuge law enforcement officer, cooperative agreements with local and state police and conservation officers help to eliminate such conflicts.

Administration

The proposed refuge may be managed as a stand alone refuge or as part of a refuge complex. Generally, a stand alone refuge has a dedicated staff and equipment and is managed locally. As part of a complex, Cherry Valley would likely have less on-site staff and would share staff and equipment with one or more other refuges. Sometimes, refuges initially are part of a complex, but as they grow in size and complexity, are then

separated to become “stand alone”. Under the “complex” scenario, the refuge staff of another refuge would have the responsibility for managing the newly established refuge. During the interim period, the Service would seek funding to station staff in Cherry Valley. Staff likely consisting of a refuge manager, wildlife biologist, and maintenance worker would be phased in at that time. In the long term, the Service’s Region 5 regional office would evaluate the need for additional full-time staff based on management needs, project loads, public use activities, etc. and could move forward with providing additional staff when justified. The ability to fill staff positions would depend on availability of funds.

The proposed Cherry Valley National Wildlife Refuge has good access via state and local roads. PA Route 611, PA Route 191, and PA Route 33 run north-south on the eastern edge, middle, and western edge of the proposed refuge, respectively. All of these roads connect to Interstate 80 just north of the proposed refuge area. To the south, these roads connect to Routes 22 and Interstate 78. East-west running roads in the Cherry Valley area include Cherry Valley Road, Middle Road, and Poplar Valley Road (aka Lower Cherry Valley Road), among others. Existing access roads on acquired properties would be evaluated for use depending on access needs, presence of sensitive species and/or habitats, public use, and other potential future needs. Some roads may be retained and improved while others may be abandoned and removed. Legal access to inholdings and homes would be maintained.

Throughout the remainder of this document the reader will be introduced to the terms “compatibility”, “compatible uses”, etc. A “compatible use” is a proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the Refuge System mission or the purposes of the national wildlife refuge. The refuge manager would not initiate or permit a new use of a national wildlife refuge or expand, renew, or extend an existing use of a national wildlife refuge unless it has been determined that the use is consistent with the mission of the Refuge System and the purposes of each specific refuge. Further, the same use may be deemed compatible on some refuges but not others due to refuge-specific differences.

Facilities

Because no actual lands have been acquired as of yet, it is difficult to discuss specifics of facilities and improvements that may be appropriate to effectively manage the refuge. This document will discuss general approaches adopted by the Service elsewhere when establishing a new refuge. As such, the Service may opt for the following when and where compatible:

Conversion of existing trails or logging roads, etc. to public use and/or refuge management access corridors. Such roads may also be abandoned to limit access to sensitive habitats and protected species. Roads and trails may only be open during certain times of year, etc. to protect wildlife resources.

Small gravel parking areas may be constructed in some areas to provide for adequate and safe parking of vehicles in potential public use areas.

A refuge headquarters/visitor contact station may be established through the adaptive reuse of buildings potentially acquired through land acquisition, e.g. a farm house may be used as a refuge office building; a pole building or barn may be used for equipment storage.

No new facilities are proposed for the refuge at this time. In the long term, the Service would establish permanent facilities in or near Cherry Valley through reuse of existing structures for use as a refuge administrative office and maintenance shop. Other potential future on-site improvements, including additional trails, improved access roads, observation platforms, photography blinds, etc. may be discussed in a future Comprehensive Conservation Plan. The construction of new facilities or conversion of existing structures is contingent upon availability of funds and acquisition of appropriate land.

Where facility construction, operation or maintenance may conflict with the conservation of federally-listed, endangered or threatened species, appropriate measures (e.g., buffers, seasonal restrictions, etc.) will be identified and implemented to avoid adverse effects. This will be done in consultation with the Service's Endangered Species Program.

Generally, public use areas would be open from dawn to dusk and wildlife management areas would be closed to the public and others (except emergency, police, and fire response). Special Use Permits would be issued to researchers, educational groups, etc. on an as needed basis providing that the activities are compatible with refuge management goals and contribute to biological survey or baseline data needs. Wildlife Management Areas, although normally closed to public access, may at times be opened to meet refuge goals. Hunting, environmental education, and interpretive walks are some examples of activities that may be allowed in these areas on a limited basis.

Funding

We would maintain a current inventory of management needs in the Service Maintenance Management System and Refuge Operating Needs System databases, and update their costs and priorities annually. Those databases provide a mechanism for each unit of the Refuge System to identify its essential staffing, mission-critical projects and major needs and form a realistic assessment of the funding needed to meet each station's goals, objectives and strategies.

Staffing

As mentioned above, the staffing situation on national wildlife refuges is based on a number of factors including refuge size and complexity, proximity to other refuges, and

funding. Based on these and other factors, the proposed refuge may be managed as a stand alone refuge or as a unit of a refuge complex. A stand alone refuge has a dedicated staff and equipment and is managed locally whereas a unit of a complexed refuge would share staff and equipment with other refuge units. At this time it is difficult to delineate staffing specifics for the proposed Cherry Valley National Wildlife Refuge because of uncertainties associated with the refuge's size, complexity, resource issues, funding, etc. Because of this uncertainty, two staffing models and a Case Study on the Growth of Cape May National Wildlife Refuge have been included in Attachment B.1 to better illustrate how these variables interact to determine levels of staffing. These models and the case study may serve to guide how Cherry Valley NWR may grow in staff over time.

The staffing strategy for the proposed Cherry Valley NWR under the individual refuge scenario identifies several new positions to ultimately be established. A refuge manager would provide direction and supervision for all activities, and ensure the effective oversight and community outreach for the successful management of acquisitions, easements and perhaps a cooperative "private lands" program. A wildlife biologist would assist in delivering the full range of wildlife conservation and restoration projects on public land, provide technical assistance, assist in the restoration and management of new acquisitions, and monitor and inventory wildlife and habitat use and condition. A maintenance worker/engineering equipment operator position would assist in meeting the maintenance and heavy equipment work obligations of the refuge. In the long term, the Service's Region 5 regional office would evaluate the need for additional full time staff based on management needs, project loads, public use activities, etc. and could move forward with providing additional staff if justified.

Partnerships

Public use areas of the refuge would be open to the public year-round from dawn to dusk. We may restrict access at times because of the incompatibility of a use, concerns about human safety, or illegal activities and law enforcement investigations. Staff would establish formal, cooperative agreements with local law enforcement departments and the county sheriff and state police, to provide protection, enforcement and appropriate law enforcement response. Conservation law enforcement personnel from the Service, Pennsylvania Game Commission, and Pennsylvania Fish and Boat Commission would also likely patrol intermittently and monitor hunting, fishing, and other public uses. We would also establish fire suppression agreements with local volunteer fire departments to coordinate fire suppression activities. The Fish and Wildlife Service Fire Program would also be actively involved in this regard. Fire staff are currently located at Wallkill River NWR in Sussex, NJ, approximately 45 miles away and would be available to assist in these activities.

We recognize the inability of any one organization to solve the problems of habitat fragmentation and land acquisition. Therefore, we would work to combine our efforts

with those of many partners, such as The Nature Conservancy, Friends of Cherry Valley, Monroe County Conservation District, Ducks Unlimited, Trout Unlimited, Pennsylvania Audubon, Pennsylvania Game Commission, Pennsylvania Fish and Boat Commission, National Park Service, Pennsylvania Department of Conservation and Natural Resources, Natural Resource Conservation Service, Monroe County, Stroud Township, Hamilton Township, Smithfield Township, Ross Township, Pocono Heritage Land Trust, Pocono Wildlife Rehabilitation Center, Brodhead Watershed Association, as well as numerous other partners yet to be identified. Staff would also look for opportunities to work with farmers and landowners to manage the land in ways that benefit the goals and interests of the refuge and its neighbors.

Management of Cherry Valley National Wildlife Refuge

Goals of Cherry Valley National Wildlife Refuge

The following goals for the proposed Cherry Valley National Wildlife Refuge were developed within the framework of the Refuge System's mission statement, the Refuge Improvement Act, the refuge's primary purposes, and other Service policy and directives. The goals are intentionally broad statements that describe desired future conditions, and would guide the management of the refuge in the interim period and the development of management objectives and strategies for the CCP.

- Protect and enhance habitats for federal trust species and species of management concern, with special emphasis on migratory birds and species listed under the ESA, along with protection of wetlands and the Kittatinny Ridge.

- Create opportunities for hunting, fishing, wildlife observation and photography, and environmental education and interpretation, while promoting activities that compliment the purposes of the refuge and other protected lands in the region.

- Promote science, education, and research through partnerships to inform land management decisions and encourage continued responsible stewardship of the natural resources of Cherry Valley.

Wildlife and Habitat Management

Recent survey work by partners, literature review, and reconnaissance surveys suggest that Cherry Valley is a unique area that supports a great diversity of habitats and wildlife. In the interim period between acquisition of property and the development of the CCP, baseline surveys and monitoring efforts would be crucial to ensuring science-based decisions for the management of the refuge. Priorities for management during this interim period would include: Monitoring and inventory of threatened and endangered species, migratory birds, and unique plant communities, and building community support. The objectives outlined below give specific directions in the management of the refuge during the interim period. The priorities may change as new information and Service policies are revised.

Objectives

- Work with partners to survey for threatened and endangered plant and animal species that potentially occur within the approved refuge boundary. Surveys for federally-listed species will be done by qualified surveyors, in accordance with the most recent Fish and Wildlife Service guidelines. Any deviations from the guidelines will be subject to consultation with the Service's Endangered Species Program.

- Work with partners to inventory fish and macroinvertebrate species in Cherry Creek and other watersheds within the refuge acquisition boundary.

- Work with partners to inventory and monitor neotropical migratory birds, waterfowl, mammals, amphibians and reptiles of concern.

- Work with partners to monitor and control (or eradicate if possible) exotic or invasive plant and animal species to preclude threats to the integrity of the ecosystem. Where such control activities may affect federally-listed species, refuge staff will consult with the Service's Endangered Species Program.

- Work with partners to inventory vegetative communities on lands within the refuge acquisition boundary and develop a vegetation map of the study area using GIS tools.

- Coordinate with adjacent landowners and other partners to protect and enhance the health and integrity of Cherry Creek and other watersheds within the refuge acquisition boundary.

- Monitor deer populations to determine impacts of historical hunting on deer and minimize impacts of deer on vegetation.

- Promote and support research that contributes to refuge goals and objectives, increase understanding of refuge resources, or facilitate resource management.

Acquisition Management

Protection of lands would be accomplished through fee title acquisition (about 50 percent of the acres) and establishment of conservation easements (about 50 percent of the acres). The reader is referred to the attached Land Protection Plan (LPP; Appendix E) which identifies the boundary for the proposed Cherry Valley National Wildlife Refuge (NWR, refuge). Working with others, we delineated 20,466 acres of biologically significant land in the Cherry Valley watershed. We plan to acquire land throughout this

focus area. Of their total acres, we recommend acquiring approximately 10,233 acres in fee title and approximately 10,233 acres in conservation easements.

The Land Protection Plan provides landowners and the public with an outline of U.S. Fish and Wildlife Service policies, priorities, and protection methods for land in the project area, assists landowners in determining whether their property lies within the acquisition 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.]

Managers are tasked with the responsibility for identifying tracts of land that meet the goals of the refuge. Managers work with private landowners and conservation partners to obtain conservation easements or fee title purchase of lands. As such, identifying and connecting with willing sellers within the approved refuge boundary is an important step in the acquisition process. When land is purchased in fee title it becomes the property of the people, is managed by the United States Government, and is exempt from taxation. As a partial response to this loss of tax revenue, Congress passed the Refuge Revenue Sharing Act, which provides for annual payments to local governments for fee-title land designated as national wildlife refuges. Depending upon the location, the amount of payment often equals or exceeds the value in taxes the town would have collected if the property were in private ownership. The Service pays according to a formula, usually three-quarters of 1 percent of the appraised value of the land, subject to the availability of funds through congressional appropriations, to the unit of local government that levies and collects general purpose and real property taxes.

When the Service purchases land in fee or easements, federal law requires us to offer fair market value for the property or rights. We base our offers on professionally prepared appraisals and comparisons of actual sale prices of comparable properties in the vicinity. Both the refuge manager and a realty specialist from our regional office in Hadley, Massachusetts, would contact private landowners who inform us of their interest in selling easements or land in fee title to the Service. It is the policy of the Service to acquire land only from willing sellers. Cultural resources would be evaluated on a parcel by parcel basis to identify and protect potential archeological and historic sites.

Public Use Management

Appropriate Refuge Uses Policy

The initial decision-making process a refuge manager follows when first considering whether or not to allow a proposed use on a refuge involves an evaluation of the appropriateness of a given activity on a national wildlife refuge. The refuge manager must find a use to be appropriate before undertaking a compatibility review of the use. If a proposed use is not found to be appropriate, the refuge will not allow the use and will not prepare a compatibility determination. By screening out proposed uses that are not appropriate to the refuge, the refuge manager avoids unnecessary

compatibility reviews. By following the process for finding the appropriateness of a use, we strengthen and fulfill the Refuge System mission.

Compatibility and Priority Uses

The Refuge Improvement Act establishes six priority public uses on refuges. Those priority uses depend on the presence, or the expectation of the presence of wildlife. These uses are: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. Although these priority uses must receive our consideration in planning for public use, they also must be compatible with the purpose for which the refuge was established and the mission of the NWRS. Compatibility determinations, which evaluate the impacts of a use that has been determined to be appropriate in the context of species or habitats, aid in making those decisions. As lands are acquired in Cherry Valley, compatibility determinations would be used to decide what public use opportunities are compatible and can be permitted.

Public use opportunities contribute to the long term protection of wildlife resources by promoting understanding, appreciation and support for wildlife conservation. The six priority public uses will be accommodated where they do not have a significant negative impact on wildlife. All the proposed public use activities are contingent upon availability of staff and funding to develop and implement these programs. We will promote opportunities for volunteers and develop community appreciation and public support for the refuge. We would work with school districts and teachers to develop an environmental education program featuring unique species or communities at the refuge.

Other Uses and Limitations

In addition to the priority uses described above, many other uses may also be determined to be appropriate and compatible with management of the refuge. Some examples of these types of uses from other refuges include: cross-country skiing, berry picking, haying, grazing of livestock, collection of edible wild plants for personal use, furbearer management, etc. The site-specific conditions and wildlife resources at each refuge will dictate the additional uses that may be permitted. Since these conditions vary from refuge to refuge, particular uses may be permitted at one refuge and precluded at another.

Although a refuge use may be both appropriate and compatible, the Refuge Manager retains the authority to prohibit or modify the use if potential conflicts are perceived. For example, on some occasions, two appropriate and compatible uses may interfere with each other. In these situations, even though both uses are appropriate and compatible, the Refuge Manager may need to limit or entirely restrict one of the uses in order to provide the greatest benefit to refuge resources and the public. For proposed uses that might develop after the preparation of this

document, the refuge would apply the same procedure outlined above to make an appropriateness finding without additional public review and comment. If a proposed use is determined to be appropriate, a determination of whether or not the use is compatible will be made and will include an opportunity for public involvement in the decision making process.

Table 1 summarizes public uses that would likely be allowed during the interim phase and their potential limitations under current conditions in Cherry Valley. Attachment B.2 presents the compatibility determinations summarized in Table 1.

Table 1. Summary of the six priority public uses and the proposed interim public uses. All public uses are subject to logistical and biological constraints and the availability of funding and staff.

Public Use Activity	**Would this use be provided during the interim phase?**
Public hunting	Likely, limited by available hunting areas, some seasons may conflict with presence of species of concern.
Public fishing	Likely, limited by few fishing access areas and presence of species of concern.
Environmental education	Likely, limited due to staffing. Need for partnership development with local schools and conservation groups.
Interpretation	Likely, limited due to staffing. Need for partnership development, perhaps Friends of Cherry Valley.
Wildlife Observation	Likely, limited due to lack of public use areas and safe parking lots. Need for partnership development.
Photography	Likely, limited due to lack of public use areas and safe parking lots. Need for partnership development.

1. Hunting: Hunting is a prized activity by many of the residents of Cherry Valley. Private lands are largely posted, greatly limiting hunting access. Non-residents of Cherry Valley are sometimes able to obtain permission from landowners for hunting, but this occurs on a limited basis. In general, select and appropriate lands that would become part of the refuge likely would be open for public hunting, on a permit basis. The issuance of permits allows the refuge to track the numbers of hunters afield to provide for safety and limit other potential impacts. A more thorough review of the various Pennsylvania hunting seasons

[(Squirrel, Ruffed Grouse, Rabbit, Pheasant, Bobwhite Quail, Woodchucks, Crows, Starlings and English Sparrows, Wild Turkey, Spring Gobbler, Black Bear, Deer (Archery), Deer (Muzzleloader), Deer (Firearms), and Deer (Flintlock)], would be required in order to establish compatibility of each of these seasons with the refuge purpose. However, until such time as manageable units are acquired and a detailed hunt plan is written and based on the attached compatibility determination, hunting on parcels acquired as part of the refuge would be allowed to continue on an interim basis at the same level of activity that existed prior to Service acquisition of the land.

2. Fishing: Cherry Creek is a valued trout fishery. At least one fishing club leases land along the Cherry Creek. Like hunting, fishing is limited due to the posting of private land and limited public access. In general, become part of the refuge would be open for public fishing, providing select and appropriate lands that would they are in close proximity to Cherry Creek. It is reasonable to expect, given the habitat diversity in the Cherry Creek that trout, bass, pickerel, American eel, sunfish, crappies, catfish, rock bass, suckers, and carp would be present. Until such time as manageable riparian units are acquired and a detailed public use plan is written and based on the attached compatibility determination, fishing along Cherry Creek on parcels acquired as part of the refuge would be allowed to continue on an interim basis at the same level of activity that existed prior to Service acquisition of the land

3. Wildlife Observation: Cherry Valley provides a wealth of wildlife for observation, however viewing opportunities are limited by access. The narrow state and township roads running through the valley do not provide adequate pull-offs so safety is of the utmost concern. Until such time as better wildlife observation opportunities can be provided and a detailed public use plan is written and based on the attached compatibility determination, wildlife observation would be allowed to continue on an interim basis on parcels acquired by the refuge at the same level of activity that existed prior to Service acquisition of the land.

4. Photography: Until such time as better wildlife photography opportunities can be provided and a detailed public use plan is written and based on the attached compatibility determination, wildlife photography would be allowed to continue on an interim basis on parcels acquired by the refuge at the same level of activity that existed prior to Service acquisition of the land.

5. Environmental Education: Environmental Education is limited by the lack of support facilities in the valley. Shortfalls in environmental education opportunities may be overcome with partnerships with local schools and conservation groups. Until such time as better environmental education opportunities can be provided and a detailed public use plan is written and

based on the attached compatibility determination, environmental education would be allowed to continue on an interim basis on parcels acquired by the refuge at the same level of activity that existed prior to Service acquisition of the land.

6. Interpretation: Interpretation is limited by the lack of support facilities in the valley. Shortfalls in interpretive opportunities may be overcome with partnerships with local schools and conservation groups. Until such time as better interpretation opportunities can be provided and a detailed public use plan is written and based on the attached compatibility determination, interpretative activities would be allowed to continue on an interim basis on parcels acquired by the refuge at the same level of activity that existed prior to Service acquisition of the land.

Where any of the priority public uses may conflict with the conservation of federally-listed, endangered or threatened species, appropriate measures (e.g., buffers, seasonal restrictions, etc.) will be identified and implemented to avoid adverse effects. This will be done in consultation with the Service's Endangered Species Program.

Operations and Planning

Refuges are managed according to an annual work plan (AWP) that summarizes goals and objectives of the upcoming year. Specific actions for on the ground work such as operation procedures, wildlife inventory plans, habitat management actions, public use, etc. are covered in detail in refuge specific management plans. An annual work plan may generally state, for example, that 150 acres of invasive plant species will be controlled on the refuge, setting a target and goal for invasive species management. The Invasive Species Management Plan would provide more detail, such as various species to be controlled, location of invasive species, control methods, timing of control, monitoring of effectiveness of the application, re-treating areas, monitoring, etc.

Long term planning, outlined earlier, includes the preparation of a comprehensive conservation plan (CCP). A CCP describes the desired future conditions of a refuge and provides long-range guidance and management direction to achieve the purposes of the refuge. A CCP is consistent with and helps fulfill the mission of the Refuge System and acts to maintain and, where appropriate, restore the ecological integrity of each refuge and the Refuge System. The National Wildlife Refuge System Improvement Act of 1997 mandates that the U.S. Fish and Wildlife Service write CCPs for all national wildlife refuges and reevaluate them every 15 years or as needed. The National Environmental Policy Act (NEPA) mandates that we incorporate, as appropriate, either an environmental assessment or an environmental impact statement in the CCP to satisfy NEPA requirements. The planning project provides a unique opportunity for the Service to involve individuals and local communities in the long-term management of the refuge.

Conclusion

Should the refuge proposal go forward, the Service and the Refuge System will work toward the biological, cultural, and public use goals that have been outlined herein. Partnerships with landowners, neighbors, conservation organizations, and local, county, state, and other federal government agencies are a crucial component of a successful Cherry Valley National Wildlife Refuge.

Attachment B.1

Proposed Cherry Valley National Wildlife Refuge Staffing Concept:
National Wildlife Refuge Staffing Model
and a
Case Study from
Cape May National Wildlife Refuge
Cape May, NJ

Introduction

The staffing levels of a National Wildlife Refuge are based on a number of factors including refuge size and complexity, proximity to other refuges, and funding. Based on these and other factors, the proposed Cherry Valley refuge could be managed as a stand alone refuge or as a unit of a refuge complex. A stand alone refuge has a dedicated staff and equipment and is managed locally whereas a unit of a complexed refuge would share staff and equipment with other refuge units. At this time it is challenging to delineate staffing specifics for the proposed Cherry Valley National Wildlife Refuge because of uncertainties associated with the refuge's size, complexity, resource issues, funding, etc., and how these variables can and will change over time. Because of these uncertainties, we have included Attachment B.1 which gives the reader a background on how a number of variables interact to determine levels of staffing at a particular national wildlife refuge. These two illustrations include: the application of the newly promulgated Staffing Model for Field Stations, National Wildlife Refuge System, U.S. Fish and Wildlife Service, June 2008 Report; and a simplified look at the growth of Cape May National Wildlife Refuge in Cape May, NJ from its beginning in 1989 to present.

Staffing Model for Field Stations

Finished in June 2008, a national team of Refuge System professionals developed a staffing model to determine the level of staffing needed to most effectively operate and manage the diversity of field stations in the National Wildlife Refuge System. The predictive model evaluates the specifics of each refuge based on 15 key factors which drive the site specific workload of each field station. These factors include total acres, number of easement contracts, acres actively managed, level of invasive species, endangered species, biological management and monitoring, wilderness management, visitor services, maintenance needs, aircraft and ocean vessels, and subsistence use visits. Data used in the development of the model was drawn from the Annual Report of Lands, Refuge Annual Performance Plan or RAPP, Real Property Inventory, and other sources. A limitation to the application of the model to the proposed Cherry Valley National Wildlife Refuge is that since the refuge does not currently exist, it was necessary to make a number of assumptions regarding the 15 factors listed above. Based on these assumptions, a model was run for the Cherry Valley example that would be representative of the early years in the development of the refuge, and one that more closely approximates conditions during the later years in the refuge's evolution. The tables below have been pulled directly from the staffing guidance document and assumptions and their associated scores are shaded to assist the reader in review of the models and workload assumptions as they pertain to Cherry Valley.

Example Cherry Valley NWR Staffing Model
1: Early Refuge Development

WILDLIFE AND HABITAT FUNCTION

1	**Habitat and Biological Management (Total acres – 2006 Report of Lands – see note for this factor)**		**Score**
	> 4 million acres =	11	
	1 M acres to 4 million acres =	9	
	500,000 acres to < 1 million acres =	7	
	100,000 acres to < 500,000 acres =	5	
	40,000 acres to < 100,000 acres =	3	
	10,000 acres to < 40,000 acres =	2	
	100 acres to < 10,000 acres =	1	1
	< 100 acres or easement refuges =	0	

2	**Wetland Management Districts ONLY: number of wetland/grassland/habitat easement contracts**		**Score**
	> 2,000 contracts =	4	
	1,000 to 2,000 contracts =	3	
	500 to < 1,000 contracts =	2	
	200 to < 500 contracts =	1	
	100 to < 200 contracts =	0.5	
	< 100 contracts =	0	NA

3	**Acres Receiving Active Management (Sum of RAPP measures 1.30 through 1.37) (**forest mgmt., cropland, water mgmt., haying/mowing, grazing, etc.)		**Score**
	> 10,000 acres =	3	
	5,000 acres to 10,000 acres =	2.5	
	2,500 acres to < 5,000 acres =	2	
	1,000 acres to < 2,500 acres =	1.5	
	500 acres to < 1,000 acres =	1	1
	250 acres to < 500 acres =	0.5	
	< 250 acres =	0	

4	**Invasive Species Management**		
	a. Acres Infested Invasive Plants (RAPP 1.42)		**Score**
	> 10 acres to < 1,000 acres =	1	1
	1,000 acres to 10,000 acres =	2	
	> 10,000 acres =	3	

Score

b. Invasive Animal Populations Controlled (RAPP 1.46)

1 to 3 populations = 0.5

> 3 populations = 1

5	Endangered Species Monitoring and Management	
	a. T&E Species with Target Goals (RAPP 1.67)	**Score**
	1 to 3 populations = 0.5	0.5
	4 to 5 populations = 1	
	> 5 populations = 1.5	

	b. Number of T&E Actions Implemented (RAPP 1.72)	**Score**
	1 to 3 actions = 0.5	0.5
	4 to 5 actions = 1	
	> 5 actions = 1.5	

6	Biological Monitoring and Management	
	a. Surveys and Studies (Sum of RAPP measures 1.54, 1.73, and 1.74)	**Score**
	< 15 survey, actions, studies = 0	0
	15 to 30 surveys, actions, studies = 1	
	> 30 surveys, actions, studies = 2	

	b. Alaskan refuges only adjustment	**Score**
	Multiply "a" result above by 2	

7	**Maintaining Biological Integrity** (threats and conflicts**)**	**Score**
	No manager assigned (see notes for factor) = 0	
	Low to Med (≤ GS-12 and GS-13 stations) = 0.5	0.5
	High to Extreme (GS-14 and 15 stations) = 1	

8	**Wilderness Management (RAPP measure 3.04 + any officially proposed to Congress)**	**Score**
	< 10,000 acres	0
	10,000 acres to 25,000 acres at station = 0.5	
	> 25,000 acres to 100,000 acres at station = 1	
	> 100,000 acres to 500,000 acres at station = 3	
	> 500,000 acres = 4	

VISITOR SERVICES FUNCTION

9	**Total Number Station Visitors (RAPP measure 5.04)**	**Score**
	< 10,000 visitors = 0	0
	10,000 to 25,000 visitors = 0.5	

> 25,000 to 50,000 visitors = 1
> 50,000 to 100,000 visitors = 2
> 100,000 to 500,000 visitors = 3
> 500,000 visitors = 4

10	Environmental Education Programs (RAPP measure 5.43)	Score
	< 1,000 participants	**0**
	1,000 to 2,000 participants = 0.5	
	> 2,000 to 10,000 participants = 1	
	> 10,000 participants = 2	

11	Volunteer Management (RAPP measure 6.02 but 3-YR average 2005 to 2007)	Score
	>100 volunteers = 1	
	50 to 100 volunteers = 0.5	**0.5**

12	Friends Group Coordination (RAPP measure 6.10)	Score
	Yes, have Friends Group = 0.5	**0.5**

FACILITIES AND MAINTENANCE FUNCTION

13	Maintenance and Asset Management -- Real Property Inventory Replacement Value (RPI data as of Oct. 1, 2007)	Score
	< $5 Million in value = 0	**0**
	$5M to < $15M = 0.5	
	$15 M to < $50 M = 1	
	$50 M to < $100 M = 2	
	$100 M to $150 M = 3.5	
	> $150 M = 3.5 + 1 for each $50M increment above $150M (e.g. $200 M = 4.5)	

SUB TOTAL

14	Special Alaska and Other Station Factors	Score
	a. Aircraft assigned to station = 1 per aircraft	
	b. Ocean-going vessel = actual current FTEs assigned	
	c. Alaska special commercial uses = 1 per refuge	
	d. Subsistence (actual current + sum of RAPP factors 6.14 thru 6.16)	**Score**
	< 500 subsistence visits = 1 + current	
	500 visits to < 1,000 visits = 2 + current	
	1,000 visits to < 3,000 visits = 3 + current	
	3,000 visits to < 5,000 visits = 4 + current	
	5,000 visits to < 10,000 visits = 5 + current	

≥ 10,000 subsistence visits = 6 + current

LAW ENFORCEMENT FUNCTION

15	**LE Workload** (To be imported based on Washington deployment actions)	**Score**
		NA
	STATION TOTAL	5.5

ASSET MANAGEMENT (to be imported and added to Regional total based on Washington-developed model)

FIRE and PARTNERS for F&W FUNCTIONS
(non-1260 funding, modeled separately)

Based on the assumptions presented in the table above, the proposed Cherry Valley National Wildlife Refuge could be expected to require 5.5 Full Time Employees or FTE's to meet its habitat protection and restoration goals early on in its development. This score was driven by assumptions on the initial size of the refuge, number of acres in active management, invasive species control activities, work on threatened and endangered species, and working with an already existing volunteer base and Friends group.

Now we will look at a more developed refuge model that assumes conditions that could reasonably be expected later on in the development of the refuge:

Example Cherry Valley NWR Staffing Model 2: Later Refuge Development

WILDLIFE AND HABITAT FUNCTION

1	**Habitat and Biological Management (Total acres – 2006 Report of Lands – see note for this factor)**		**Score**
	> 4 million acres =	11	
	1 M acres to 4 million acres =	9	
	500,000 acres to < 1 million acres =	7	
	100,000 acres to < 500,000 acres =	5	
	40,000 acres to < 100,000 acres =	3	
	10,000 acres to < 40,000 acres =	2	2
	100 acres to < 10,000 acres =	1	
	< 100 acres or easement refuges =	0	

2	**Wetland Management Districts ONLY: number of wetland/grassland/habitat easement contracts**		**Score**
	> 2,000 contracts =	4	
	1,000 to 2,000 contracts =	3	
	500 to < 1,000 contracts =	2	
	200 to < 500 contracts =	1	
	100 to < 200 contracts =	0.5	
	< 100 contracts =	0	

3	**Acres Receiving Active Management (Sum of RAPP measures 1.30 through 1.37) (**forest mgmt., cropland, water mgmt., haying/mowing, grazing, etc.)		**Score**
	> 10,000 acres =	3	
	5,000 acres to 10,000 acres =	2.5	2.5
	2,500 acres to < 5,000 acres =	2	
	1,000 acres to < 2,500 acres =	1.5	
	500 acres to < 1,000 acres =	1	
	250 acres to < 500 acres =	0.5	
	< 250 acres =	0	

4	**Invasives Species Management**	
	a. Acres Infested Invasive Plants (RAPP 1.42)	**Score**

> 10 acres to < 1,000 acres = 1		
1,000 acres to 10,000 acres = 2		2
> 10,000 acres = 3		

b. Invasive Animal Populations Controlled (RAPP 1.46) **Score**

1 to 3 populations = 0.5		
> 3 populations = 1		

5 Endangered Species Monitoring and Management

a. T&E Species with Target Goals (RAPP 1.67) **Score**

1 to 3 populations = 0.5		
4 to 5 populations = 1		1
> 5 populations = 1.5		

b. Number of T&E Actions Implemented (RAPP 1.72) **Score**

1 to 3 actions = 0.5		
4 to 5 actions = 1		1
> 5 actions = 1.5		

6 Biological Monitoring and Management

a. Surveys and Studies (Sum of RAPP measures 1.54, 1.73, and 1.74) **Score**

< 15 survey, actions, studies = 0		0
15 to 30 surveys, actions, studies = 1		1
> 30 surveys, actions, studies = 2		

b. Alaskan refuges only adjustment **Score**

Multiply "a" result above by 2

7 Maintaining Biological Integrity (threats and conflicts**)** **Score**

No manager assigned (see notes for factor) = 0		
Low to Med (≤ GS-12 and GS-13 stations) = 0.5		0.5
High to Extreme (GS-14 and 15 stations) = 1		

8 Wilderness Management (RAPP measure 3.04 + any officially proposed to Congress) **Score**

< 10,000 acres		0
10,000 acres to 25,000 acres at station = 0.5		
> 25,000 acres to 100,000 acres at station = 1		
> 100,000 acres to 500,000 acres at station = 3		
> 500,000 acres = 4		

VISITOR SERVICES FUNCTION

9	Total Number Station Visitors (RAPP measure 5.04)			Score
	< 10,000 visitors	=	0	0
	10,000 to 25,000 visitors	=	0.5	
	> 25,000 to 50,000 visitors	=	1	
	> 50,000 to 100,000 visitors	=	2	
	> 100,000 to 500,000 visitors	=	3	
	> 500,000 visitors	=	4	

10	Environmental Education Programs (RAPP measure 5.43)			Score
	< 1,000 participants			**0**
	1,000 to 2,000 participants	=	0.5	
	> 2,000 to 10,000 participants	=	1	
	> 10,000 participants	=	2	

11	Volunteer Management (RAPP measure 6.02 but 3-YR average 2005 to 2007)			Score
	>100 volunteers	=	1	
	50 to 100 volunteers	=	0.5	**0.5**

12	Friends Group Coordination (RAPP measure 6.10)			Score
	Yes, have Friends Group	=	0.5	**0.5**

FACILITIES AND MAINTENANCE FUNCTION

13	Maintenance and Asset Management -- Real Property Inventory Replacement Value (RPI data as of Oct. 1, 2007)			Score
	< $5 Million in value	=	0	
	$5M to < $15M	=	0.5	
	$15 M to < $50 M	=	1	
	$50 M to < $100 M	=	2	2
	$100 M to $150 M	=	3.5	
	> $150 M	=	3.5 + 1 for each $50M increment above $150M (e.g. $200 M = 4.5)	

SUB TOTAL

14	Special Alaska and Other Station Factors	Score
	a. Aircraft assigned to station = 1 per aircraft	
	b. Ocean-going vessel = actual current FTEs assigned	
	c. Alaska special commercial uses = 1 per refuge	
	d. Subsistence (actual current + sum of RAPP factors 6.14 thru 6.16)	**Score**

< 500 subsistence visits =	1 + current
500 visits to < 1,000 visits =	2 + current
1,000 visits to < 3,000 visits =	3 + current
3,000 visits to < 5,000 visits =	4 + current
5,000 visits to < 10,000 visits =	5 + current
≥ 10,000 subsistence visits =	6 + current

LAW ENFORCEMENT FUNCTION

15	**LE Workload** (To be imported based on Washington deployment actions)	**Score**
		1
	STATION TOTAL	14

ASSET MANAGEMENT (to be imported and added to Regional total based on Washington-developed model)

FIRE and PARTNERS for F&W FUNCTIONS
(non-1260 funding, modeled separately)

In this model, the size and complexity of the refuge have increased dramatically. Active management is present on a greater number of acres. Invasive species management, threatened and endangered species actions, biological surveys, and law enforcement issues have greatly increased over the earlier model. Based on the assumptions presented in the table above, the proposed Cherry Valley National Wildlife Refuge could be expected to require 14 Full Time Employees or FTE's to meet its habitat protection and restoration goals later on in its development.

Cape May National Wildlife Refuge

Our second look at staffing on National Wildlife Refuges brings us to an example provided by actual growth and complexity data at the Cape May National Wildlife Refuge, and how that increase equated to increases in staffing. A summary of this information is presented in the following table:

Year	Funding Source			Acreage Summary		Staffing Summary						
	LWCF (acres)	MBCF (acres)	Other (acres)	Annual Total (acres)	Overall Total (acres)	Staffing (FTE)	Staff Composition					
1989	911.78	90.04	0	1001.82	1001.82	1	RM					
1990	982.56	994.82	135	2112.38	3114.2	1	RM					
1991	1380.1	351.52	0	1731.62	4845.82	1	RM					
1992	512.47	436.73	0	949.2	5795.02	1	RM					
1993	181.23	36.3	0	217.53	6012.55	1	RM					
1994	366.89	48.5	0	415.39	6427.94	2.5	RM	TLE	PTAO			
1995	485.85	284.51	0	770.36	7198.3	2.5	RM	TLE	PTAO			
1996	0	1087.87	0	1087.87	8286.17	3.5	RM	TLE	PTAO	ROS		
1997	0	328.54	0	328.54	8614.71	3.5	RM	TLE	PTAO	ROS		
1998	382.21	468.59	0	850.8	9465.51	3.5	RM	TLE	PTAO	ROS		
1999	131.37	4.85	490.8	627.02	10092.53	3.5	RM	TLE	PTAO	ROS		
2000	243.2	0	0	243.2	10335.73	3.5	RM	TLE	PTAO	ROS		
2001	237.8	166.77	0	404.57	10740.3	3	RM	FTLE	ROS			
2002	150.05	117.86	0	267.91	11008.21	3	RM	FTLE	WB			
2003	26.46	44	0	70.46	11078.67	4	RM	DRM	FTLE	WB		
2004	31.4	28.11	0	59.51	11138.18	6*	RM	DRM	FTLE	WB	M	AO
2005	0	11	0	11	11149.18	5*	RM	DRM	FTLE	WB	M	
2006	0	0	0	0	11149.18	5*	RM	DRM	FTLE	WB	M	
2007	0	0	0	0	11149.18	5*	RM	DRM	FTLE	WB	M	
2008	0	0	0	0	11149.18	5*	RM	DRM	FTLE	WB	M	

LWCF = Land and Water Conservation Fund
MBCF = Migratory Bird Conservation Fund
* Cape May and Supawna Meadows NWR's complexed
2006 - Present: Regional Administrative Officer located at Great Swamp NWR

RM = Refuge Manager
DRM = Deputy Refuge Manager
TLE = Temporary Law Enforcement Officer
FTLE = Full Time Law Enforcement Officer
WB = Wildlife Biologist
PTAO = Part Time Administrative Officer
ROS = Refuge Operations Specialist
M = Maintenance
AO = Administrative Officer

From these data, the reader will note several important trends in refuge development. First, over the course of a 16 year period, the land base at Cape May NWR increased from 0 to over 11,000 acres. Most of this land was purchased with monies from the Land and Water Conservation Fund and the Migratory Bird Conservation Fund, although over 600 acres were acquired through donation and other means (Other). The reader will note that some years were very busy in terms of land acquisition and others were slow; since 2006, no additional lands have been acquired. The reader will also note that refuge staffing increased with increases in the land base, starting with placement of a Refuge Manager on site in 1989.

Summary

The proposed Cherry Valley National Wildlife Refuge could be managed as a stand alone refuge or as part of a refuge complex. Generally, a stand alone refuge has a dedicated staff and equipment and is managed locally. As part of a complex, Cherry Valley would likely have less on site staff and would share staff and equipment with other refuge(s).

Sometimes, refuges in their early stages are part of a complex, but as they grow in size and complexity, are then split off to be stand alone. Under the "complex" scenario, the refuge staff of another refuge would have the responsibility for at least some of the management of the newly established refuge. During the interim period, the Service would seek funding to station staff in Cherry Valley. A staff likely consisting of a refuge manager, wildlife biologist, and engineering equipment operator would be phased in at that time. In the longer term, the Regional Office would evaluate the need for additional full time staff based on management needs, project loads, public use activities, etc. and could move forward with providing additional staff if justified. The ability to fill staff positions would depend on availability of funds.

Acknowledgements

We would like to thank Howard Schlegel, Refuge Manager, Cape May National Wildlife Refuge; Jared Brandwein, Refuge Manager, Back Bay National Wildlife Refuge; Don Hultman, Refuge Manager, Upper Mississippi River National Wildlife and Fish Refuge; and Walt Quist, Region 5, Realty for their cooperation in the preparation of this Attachment.

Attachment B.2.
Compatibility Determinations

Pre-Acquisition Compatibility Determination
Cherry Valley National Wildlife Refuge

(For use on lands included in the proposed Cherry Valley National Wildlife Refuge)

Uses

Wildlife observation and photography, environmental education and interpretation

Refuge names, establishing and acquisition authorities, and purposes

Each National Wildlife Refuge is established under specific legislation or administrative authority. Similarly, each refuge has one or more specific legal purposes for which it was established. The establishing legislation or authority and the purposes for the Cherry Valley National Wildlife Refuge are:

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

"to conserve (A) fish or wildlife which are listed as endangered species or threatened species…or (B) plants…" 16 U.S.C. §1534 (Endangered Species Act of 1973), and

"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), and

"for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..." 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 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

What is the use?

This pre-acquisition compatibility determination serves as our commitment to allow wildlife observation and photography, environmental education and interpretation activities to continue, where they are pre-existing and owner-authorized, on lands that will be acquired by the Service, should the refuge proposal go forward.

The specific parcels covered by this compatibility determination have been identified in the final Land Protection Plan, Appendix E of the Final Cherry Valley National Wildlife Refuge Feasibility Study and Environmental Assessment (Final EA). Within the proposed refuge acquisition boundary, most of the parcels are privately owned and currently unimproved, and we are aware of only a few existing public use opportunities. As we pursue acquisition of individual parcels we will be able to verify where other opportunities exist.

Are the uses priority public uses?

Yes, wildlife observation and photography, and environmental education and interpretation were identified as priority, wildlife-dependent public uses by the National Wildlife Refuge System Improvement Act of 1997 (Refuge Improvement Act, P.L. 105-57).

Where would the use be conducted?

The Final EA identifies a proposed acquisition boundary for the refuge. It also delineates the specific parcels, using township and county tax records, proposed for acquisition by the Service. The uses would be allowed on all parcels where they existed prior to acquisition by the Service, until such time as detailed planning occurs.

When would the use be conducted?

In general, refuges are open from sunrise to sunset for these activities; the only exceptions would be pre-approved environmental education and interpretive programs. Environmental education and interpretation, and wildlife observation and photography activities would occur year-round.

How would the use be conducted?

The uses would be allowed to continue in the manner in which they were conducted prior to acquisition by the Service.

Why is the use being proposed?

These priority public uses may already be occurring on privately owned lands, with the owner's permission. These uses are also identified as priority uses by the National Wildlife Refuge System Improvement Act of 1997.

Availability of Resources

No additional Refuge resources would be devoted to these uses; that is, no additional infrastructure would be developed to accommodate these new areas until compatibility determinations are revised in response to new information or until we revise individual step-down management plans. Any proposed expenditures for improving public use opportunities in these areas would be identified as projects in a Visitor Services Plan. Acquisition and posting of these parcels would occur regardless of their potential for wildlife-dependent public use.

Anticipated Impacts of Proposed Actions

We expect only minimal impacts from continuing to allow these priority public uses.

Public Review and Comment

As part of the Draft EA, this compatibility determination has been through extensive public review, including a public comment period, following release of the Draft EA. Specific and general comments regarding this compatibility determination or public use opportunities have been addressed in the Final EA and supporting documents.

Determination

The uses are compatible _X_ .
The uses are not compatible _____.

Stipulations Necessary to Ensure Compatibility

The following conditions must all be met before allowing existing, priority, wildlife-dependent public use to continue on an interim basis on newly acquired lands:

1) There are no indirect, direct, or cumulative threats anticipated to human health or safety;

2) There are no indirect, direct, or cumulative threats anticipated to natural or cultural resources;

3) The use would not compromise management strategies based on site-specific conditions; and,

4) There are no anticipated, irresolvable conflicts between or among priority public uses.

Existing uses may be allowed if these conditions are found to exist; all refuge regulations would apply to the newly acquired lands. This pre-acquisition compatibility determination is in effect until the currently approved compatibility determinations for the Refuge are revised. A compatibility determination will be revised when conditions under which the use was first allowed change significantly, or if there is significant new information regarding the effects of the use, or with completion of a Comprehensive Conservation Plan. There may also be changes warranted when the Visitor Services Plan is completed. However, at any time, the Refuge Manager retains the authority to modify or cancel any public uses in order to insure compatibility with refuge purposes or to insure the conditions above are met. Significant changes to these compatibility determinations will require another public review period.

Justification

Existing priority, wildlife-dependent recreational uses have been determined appropriate by the Refuge Improvement Act, are considered compatible through this determination, and will continue on newly acquired tracts of land. These programs support the mission of the National Wildlife Refuge System by promoting an understanding and appreciation of natural and cultural resources and their management within a national system of refuges. Our programs would reach out to all segments of the public to expand support for the Refuge System. Individual refuge programs will be consistent with, and fully support, the goals and objectives of the refuge.

Signatures

S McMahon — **Refuge Manager**

12-9-08 — **Date**

Anthony D Lege — **Regional Chief, Concurrence**

12-5-08 — **Date**

Mandatory 15 year Reevaluation

_____ — **Date**

Pre-Acquisition Compatibility Determination
Cherry Valley National Wildlife Refuge

(For use on lands included in the proposed Cherry Valley National Wildlife Refuge)

Uses

Hunting

Refuge names, establishing and acquisition authorities, and purposes

Each National Wildlife Refuge is established under specific legislation or administrative authority. Similarly, each refuge has one or more specific legal purposes for which it was established. The establishing legislation or authority and the purposes for the Cherry Valley National Wildlife Refuge are:

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

"to conserve (A) fish or wildlife which are listed as endangered species or threatened species…or (B) plants…" 16 U.S.C. §1534 (Endangered Species Act of 1973), and

"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), and

"for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..." 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 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

What is the use?

This pre-acquisition compatibility determination serves as our commitment to allow hunting to continue, where it is pre-existing and owner-authorized, on lands that will be acquired by the Service, should the refuge proposal go forward.

The specific parcels covered by this compatibility determination have been identified in the final Land Protection Plan, Appendix E in the Final Cherry Valley National Wildlife Refuge Feasibility Study and Environmental Assessment (Final EA). Within the proposed refuge acquisition boundary, most of the parcels are privately owned and currently unimproved, and we are aware of only a few existing public use opportunities. As we pursue acquisition of individual parcels we will be able to verify where other opportunities exist. Hunting activities covered under this Compatibility Determination include:

Squirrel, ruffed grouse, rabbit, pheasant, Northern bobwhite, woodchuck, crow, European starling, English sparrow, wild turkey (including spring season), black bear, white-tailed deer (archery, muzzleloader, firearm, flintlock), and others consistent with Pennsylvania Game Commission laws and regulations.

Are the uses priority public uses?

Yes, hunting has been identified as a priority, wildlife-dependent public use by the National Wildlife Refuge System Improvement Act of 1997 (Refuge Improvement Act, P.L. 105-57).

Where would the use be conducted?

The Final EA identifies a proposed acquisition boundary for the refuge. It also delineates the specific parcels, using township and county tax records, proposed for acquisition by the Service. The use would be allowed on all parcels where they existed prior to acquisition by the Service, until such time as detailed planning occurs.

When would the use be conducted?

In general, refuges are open from sunrise to sunset for these activities; the only exceptions would be pre-approved environmental education and interpretive programs. Hunting activities would occur during seasons and times established by the Pennsylvania Game Commission.

How would the use be conducted?

The use would be allowed to continue in the manner in which they were conducted prior to acquisition by the Service.

Why is the use being proposed?

This priority public use may already be occurring on privately owned lands, with the owner's permission. This use is also identified as a priority use by the National Wildlife Refuge System Improvement Act of 1997.

Availability of Resources

No additional Refuge resources would be devoted to these uses; that is, no additional infrastructure would be developed to accommodate these new areas until compatibility determinations are revised in response to new information or until we revise individual step-down management plans. Any proposed expenditures for improving public use opportunities in these areas would be identified as projects in a Hunting or Visitor Services Plan. Acquisition and posting of these parcels would occur regardless of their potential for wildlife-dependent public use.

Anticipated Impacts of Proposed Actions

We expect only minimal impacts from continuing to allow these priority public uses.

Public Review and Comment

As part of the Draft EA, this compatibility determination has undergone extensive public review, including a public comment period, following release of the draft study document. Specific and general comments regarding this compatibility determination or public use opportunities have been addressed in the Final EA and supporting documents.

Determination

The uses are compatible _X_.
The uses are not compatible _____.

Stipulations Necessary to Ensure Compatibility

The following conditions must all be met before allowing existing, priority, wildlife-dependent public use to continue on an interim basis on newly acquired lands:

1) There are no indirect, direct, or cumulative threats anticipated to human health or safety;

2) There are no indirect, direct, or cumulative threats anticipated to natural or cultural resources;

3) The use would not compromise management strategies based on site-specific conditions; and,

4) There are no anticipated, irresolvable conflicts between or among priority public uses.

Existing uses may be allowed if these conditions are found to exist; all refuge regulations would apply to the newly acquired lands. This pre-acquisition compatibility determination is in effect until the currently approved compatibility determinations for the Refuge are revised. A compatibility determination will be revised when conditions under which the use was first allowed change significantly, or if there is significant new information regarding the effects of the use, or with completion of a Comprehensive Conservation Plan. There may also be changes warranted when the Hunting and/or Visitor Services Plans are completed. However, at any time, the Refuge Manager retains the authority to modify or cancel any public uses in order to insure compatibility with refuge purposes or to insure the conditions above are met. Significant changes to these compatibility determinations will require another public review period.

Justification

Existing priority, wildlife-dependent recreational uses have been determined appropriate by the Refuge Improvement Act, are considered compatible through this determination, and will continue on newly acquired tracts of land. These programs support the mission of the National Wildlife Refuge System by promoting an understanding and appreciation of natural and cultural resources and their management within a national system of refuges. Our programs reach out to all segments of the public to expand support for the Refuge System. Individual refuge programs would be consistent with, and fully support, the goals and objectives for the refuge.

Signatures

Refuge Manager	12-9-08 **Date**
Regional Chief, Concurrence	12-5-08 **Date**
Mandatory 15 year Reevaluation	_____ **Date**

Pre-Acquisition Compatibility Determination
Cherry Valley National Wildlife Refuge

(For use on lands included in the proposed Cherry Valley National Wildlife Refuge)

Uses

Fishing

Refuge names, establishing and acquisition authorities, and purposes

Each National Wildlife Refuge is established under specific legislation or administrative authority. Similarly, each refuge has one or more specific legal purposes for which it was established. The establishing legislation or authority and the purposes for the Cherry Valley National Wildlife Refuge are:

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

"to conserve (A) fish or wildlife which are listed as endangered species or threatened species…or (B) plants…" 16 U.S.C. §1534 (Endangered Species Act of 1973), and

"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), and

"for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..." 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 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

What is the use?

This pre-acquisition compatibility determination serves as our commitment to allow fishing to continue, where it is pre-existing and owner-authorized, on lands that will be acquired by the Service, should the refuge proposal go forward.

The specific parcels covered by this compatibility determination have been identified in the Final Cherry Valley National Wildlife Refuge Feasibility Study and Environmental Assessment (Final EA). Within the proposed refuge acquisition boundary, most of the parcels are privately owned and currently unimproved, and we are aware of only a few existing public use opportunities. As we pursue acquisition of individual parcels we will be able to verify where other opportunities exist. Fishing activities covered under this Compatibility Determination include:

Trout, bass, pickerel, American eel, sunfish, crappie, catfish, rock bass, sucker, carp, and others consistent with Pennsylvania Fish and Boat Commission laws and regulations.

Are the uses priority public uses?

Yes, fishing was identified as a priority, wildlife-dependent public use by the National Wildlife Refuge System Improvement Act of 1997 (Refuge Improvement Act, P.L. 105-57).

Where would the use be conducted?

The Final EA identifies a proposed acquisition boundary for the refuge. It also delineates the specific parcels, using township and county tax records, proposed for acquisition by the Service. The use would be allowed on all parcels where they existed prior to acquisition by the Service, until such time as detailed planning occurs.

When would the use be conducted?

In general, refuges are open from sunrise to sunset for these activities; the only exceptions would be pre-approved environmental education and interpretive programs. Fishing activities would occur during seasons and times established by the Pennsylvania Fish and Boat Commission.

How would the use be conducted?

The use would be allowed to continue in the manner in which they were conducted prior to acquisition by the Service.

Why is the use being proposed?

This priority public use may already be occurring on privately owned lands, with the owner's permission. This use is also identified as a priority use by the National Wildlife Refuge System Improvement Act of 1997.

Availability of Resources

No additional Refuge resources would be devoted to these uses; that is, no additional infrastructure would be developed to accommodate these new areas until compatibility determinations are revised in response to new information or until we revise individual step-down management plans. Any proposed expenditures for improving public use opportunities in these areas would be identified as projects in a Fishing or Visitor Services Plan. Acquisition and posting of these parcels would occur regardless of their potential for wildlife-dependent public use.

Anticipated Impacts of Proposed Actions

We expect only minimal impacts from continuing to allow these priority public uses.

Public Review and Comment

As part of the Draft EA, this compatibility determination has undergone extensive public review, including a public comment period, following release of the Draft EA. Specific and general comments regarding this compatibility determination or public use opportunities have been addressed in the Final EA and supporting documents.

Determination

The uses are compatible _X_ .
The uses are not compatible _____.

Stipulations Necessary to Ensure Compatibility

The following conditions must all be met before allowing existing, priority, wildlife-dependent public use to continue on an interim basis on newly acquired lands:

1) There are no indirect, direct, or cumulative threats anticipated to human health or safety;

2) There are no indirect, direct, or cumulative threats anticipated to natural or cultural resources;

3) The use would not compromise management strategies based on site-specific conditions; and,

4) There are no anticipated, irresolvable conflicts between or among priority public uses.

Existing uses may be allowed if these conditions are found to exist; all refuge regulations would apply to the newly acquired lands. This pre-acquisition compatibility determination is in effect until the currently approved compatibility determinations for the Refuge are revised. A compatibility determination will be revised when conditions under which the use was first allowed change significantly, or if there is significant new information regarding the effects of the use, or with completion of a Comprehensive Conservation Plan. There may also be changes warranted when the Fishing and/or Visitor Services Plans are completed. However, at any time, the Refuge Manager retains the authority to modify or cancel any public uses in order to insure compatibility with refuge purposes or to insure the conditions above are met. Significant changes to these compatibility determinations will require another public review period.

Justification

Existing priority, wildlife-dependent recreational uses have been determined appropriate by the Refuge Improvement Act, are considered compatible through this determination, and will continue on newly acquired tracts of land. These programs support the mission of the National Wildlife Refuge System by promoting an understanding and appreciation of natural and cultural resources and their management within a national system of refuges. Our programs reach out to all segments of the public to expand support for the Refuge System. Individual refuge programs would be consistent with, and fully support, the goals and objectives for the refuge.

Signatures

Refuge Manager — **Date** 12-9-08

Regional Chief, Concurrence — **Date** 12-9-08

Mandatory 15 year Reevaluation — **Date** _____

Attachment B.3.
Endangered Species Act Compliance

Introduction

Pursuant to section 7(a)(1) of the Endangered Species Act, federal agencies are directed to use their authorities to conserve federally-listed endangered and threatened species. Pursuant to section 7(a)(2) of the ESA and the associated implementing regulations (50 CFR part 402), federal agencies must also ensure their actions do not jeopardize the continued existence of those species. Regardless of whether proposed actions are beneficial or adverse, the federal action agency is directed to consult with the Fish and Wildlife Service.

The Fish and Wildlife Service's Division of Refuges proposes several actions which may affect federally-listed species, including 1) establishment of a National Wildlife Refuge in Cherry Valley, Pennsylvania; 2) adoption of Alternative B (i.e., the "Diverse Habitat Complex" alternative) in the *Final Cherry Valley National Wildlife Refuge Feasibility Study and Environmental Assessment* (Final EA), creating a refuge acquisition boundary of up to 20,466 acres within the 31,500 acre Study Area; and 3) and implementation of activities on the refuge in accordance with the Final EA's Conceptual Management Plan. This attachment documents the Service's evaluation of the effects of these actions on federally-listed species.

Federally-listed species that occur or may occur within the refuge acquisition boundary include the bog turtle, Indiana bat, northeastern bulrush, small-whorled pogonia, and dwarf wedgemussel. Effect determinations for these species are presented below, along with the rationale for those determinations.

Refuge and Acquisition Boundary Establishment

The Service has determined that the establishment of a National Wildlife Refuge along with its associated acquisition boundary (as detailed in Alternative B of the Final EA) is wholly beneficial for federally-listed endangered and threatened species. As discussed in the Final EA, one of the primary goals for a Cherry Valley National Wildlife Refuge is to "(P)rotect and enhance habitats for federal trust species and species of management concern, emphasizing migratory birds and species listed under the federal Endangered Species Act, along with protection of wetlands and Kittatinny Ridge habitats." This goal is fully consistent with the mandate in section 7(a)(1) of the ESA to use our authorities to conserve federally-listed species. It guided the Service in identifying an appropriate acquisition boundary, and will be a leading factor in identifying and prioritizing specific land parcels for protection (via acquisition or conservation easement) and management.

While the establishment of a refuge and its associated acquisition boundary (as detailed in Alternative B of the Final EA) will not, in and of itself, result in any direct or indirect effects on federally-listed species, it is a precursor to land acquisition and land management actions which will be undertaken to benefit federally-listed species and their habitats. Consequently, as discussed above, we have determined the effect of

refuge establishment to be beneficial. If a refuge were not established (no action alternative), adverse effects to federally-listed species, particularly the bog turtle, would occur at a greater level than under the preferred alternative, as various forms of development and land use contribute to the destruction, degradation, and fragmentation of habitat. Threatened and endangered species habitat on refuge lands is expected to benefit not only from protection which precludes development activities resulting in adverse effects, but also from proactive species and habitat management efforts which may not otherwise take place.

Conceptual Management Plan

The Conceptual Management Plan (CMP) identifies activities that will be undertaken on refuge lands, pending establishment of a National Wildlife Refuge in Cherry Valley. These activities are summarized below. For each activity category, a preliminary endangered and threatened species effect determination is included. Considering a wide range of activities could occur at multiple locations on the refuge under any one of these category types, these categorical effect determinations do not necessarily encompass every possible circumstance or action. Consequently, as site-specific activities are planned, the Service will conduct intra-Service consultations on those activities that may affect federally-listed species to ensure listed species are considered and conserved.

- Monitor, inventory, and conduct surveys for threatened and endangered species and their habitats.
    - Determination – not likely to adversely affect (all listed species)
    - Rationale – Monitoring, survey and inventory activities will be done by qualified surveyors in accordance with the most recent Service-approved guidelines, which are developed to avoid potential adverse effects. Where guidelines do not exist, or where monitoring, survey or inventory methods are proposed that will deviate from Service-approved guidelines, further intra-Service consultation will occur.
- Manage threatened and endangered species and their habitats.
    - Determination – not likely to adversely affect (Indiana bat, dwarf wedgemussel, northeastern bulrush, small-whorled pogonia); likely to adversely affect (bog turtle)
    - Rationale – In most cases, we anticipate management activities will be planned and carried out in a manner that considers and avoids adverse effects to listed species, while providing a beneficial effect. For example, the *Forest Management Guidelines* detailed in the CMP are expected to

provide high quality roosting and foraging habitat for Indiana bats while avoiding the potential for adverse effects.

In the case of bog turtle habitat management, some management activities have the potential to adversely affect individual turtles, while benefitting the population as a whole. To minimize the potential for adverse effects, invasive plant control in known or potential bog turtle habitat will be carried out in accordance with the Northeast Region's intra-Service Biological Opinion (BO) dated March 10, 2006, entitled "Effects of the Implementation of Habitat Restoration Projects on the Northern Population of the Bog Turtle." Any management or restoration activities in bog turtle habitat that are not covered by the BO will be addressed in a separate intra-Service consultation, as needed.

- Conduct fish and aquatic macroinvertebrate inventories in Cherry Creek and other watersheds within the acquisition boundary.

    - Determination – not likely to adversely affect (dwarf wedgemussel); no effect (bog turtle, Indiana bat, northeastern bulrush, small-whorled pogonia)

    - Rationale – Preliminary surveys have not documented the presence of dwarf wedgemussels in Cherry Creek, although some potential habitat does exist in a few stream segments. We anticipate fish and aquatic macroinvertebrate inventories in Cherry Creek will be designed in a manner that would avoid death or injury to federally-listed mussels, should they occur in the sampling area. The remaining watersheds do not have appropriate habitat for dwarf wedgemussel. Regardless, we anticipate fish and aquatic macroinvertebrate inventories conducted in waters within the acquisition boundary will be designed in a manner that would avoid negative effects to federally-listed mussels, should the mussels occur in the sampling area.

      While bog turtles may occasionally use Cherry Creek or other watersheds as a travel corridor, they are not likely to spend a significant amount of time in the creeks, nor are they likely to be affected by the techniques used to sample for fish or macroinvertebrates. Consequently, no adverse effects to bog turtles are expected.

      Inventory methods for fish and aquatic macroinvertebrates will not target plants or terrestrial animals and will be designed to avoid any effects on other federally-listed species. Therefore, these inventories should have no effect on small-whorled pogonia, northeastern bulrush, or Indiana bat.

- Inventory and monitor neotropical migratory birds, waterfowl, mammals, amphibians, and reptiles of concern.

    - Determination – no effect (northeastern bulrush, small-whorled pogonia, dwarf wedgemussel); not likely to adversely affect (Indiana bat, bog turtle)

    - Rationale – Inventory and monitoring activities in bog turtle habitat will be reviewed by refuge staff to ensure sampling techniques for non-listed species do not have adverse effects on listed species. In some cases, the presence of federally-listed species may preclude sampling for other species. Inventory and monitoring activities for bats will be done in accordance with established mist-netting and hibernacula survey protocols, ensuring adverse effects to any Indiana bats are avoided. Use of qualified personnel to conduct surveys will minimize the risk of adverse effects to both listed and non-listed animal species of concern.

      Inventory and monitoring methods will not target plants or mussels, therefore no adverse effects to the northeastern bulrush, small-whorled pogonia, or dwarf wedgemussel are expected.

- Monitor and control exotic or invasive plant and animal species to preclude threats to the integrity of the ecosystem.

    - Determination – likely to adversely affect (bog turtle); no effect or not likely to adversely affect (Indiana bat, dwarf wedgemussel, northeastern bulrush, small-whorled pogonia)

    - Rationale – In bog turtle habitat, these activities have the potential to adversely affect individual turtles, while benefitting the population as a whole. To minimize the potential for adverse effects, invasive plant control in known or potential bog turtle habitat will be carried out in accordance with the Northeast Region's intra-Service Biological Opinion (BO) dated March 10, 2006, entitled "Effects of the Implementation of Habitat Restoration Projects on the Northern Population of the Bog Turtle." Any management or restoration activities in bog turtle habitat that are not covered by the BO will be addressed in a separate intra-Service consultation, as needed.

      Invasive plant control in habitat occupied by the northeastern bulrush or small-whorled pogonia will be designed and implemented in a manner that avoids adverse effects to these species.

At this time, we do not expect that invasive plant or animal control measures will adversely affect the Indiana bat or dwarf wedgemussel, provided control measures do not substantially affect the prey base for Indiana bats or host fish for the dwarf wedgemussel. Use of chemical or biological methods to control forest and other pests (e.g., gypsy moths, blackflies) will be subject to intra-Service consultation to ensure potential adverse effects to listed species are avoided or minimized.

- Inventory vegetative communities and develop a vegetation map of habitats within the refuge's approved acquisition boundary using GIS tools.

    - Determination – no effect (all listed species)

    - Rationale – Inventory and mapping techniques are not likely to have any direct or indirect adverse effects on listed animal or plant species.

- Coordinate with landowners and other partners to protect and enhance the health and integrity of Cherry Creek and other watersheds within the acquisition boundary.

    - Determination – no effect (northeastern bulrush, small-whorled pogonia); beneficial effect (bog turtle, Indiana bat, dwarf wedgemussel)

    - Rationale – Protection and enhancement of water quality in Cherry Creek may have beneficial effects on down-stream populations of the dwarf wedgemussel. Maintenance or improvement of water quality is also expected to conserve foraging habitat, drinking water, and insect availability for any Indiana bats that may be present. Protection of Cherry Creek and its riparian corridor is expected to conserve bog turtle travel corridors and retain habitat connectivity between bog turtle wetlands in Cherry Valley, provided any stream restoration or stabilization methods to not disrupt bog turtle dispersal. Protection of other watersheds within the acquisition boundary and the associated riparian corridors is expected to protect any existing bog turtle habitat and may provide opportunities for bog turtles to expand into additional habitat, provided appropriate habitat is available and any stream restoration or stabilization methods to not disrupt bog turtle dispersal.

      There is one known population of northeastern bulrush. No activities are currently planned near this population. As mentioned previously, as site-specific activities are planned, the Service will consult on those activities that may affect federally-listed species to ensure listed species are considered and conserved. Activities that protect and enhance Cherry Creek and other watersheds within the acquisition boundary are not

expected to affect the habitat for small-whorled pogonia, therefore no effects are expected on this species.

- Monitor deer populations and minimize deer impacts on vegetation.

    - Determination – no effect (bog turtle, Indiana bat, dwarf wedgemussel); beneficial effect (northeastern bulrush, small-whorled pogonia)

    - Rationale – These activities are not expected to affect bog turtles, Indiana bats or dwarf wedgemussels.

      Where deer densities are above levels compatible with ecosystem management objectives, deer may have a detrimental effect on native plant species, including the northeastern bulrush and small-whorled pogonia. Herbivory, primarily related to deer, has been documented as a threat to both species, so a reduction in deer densities may reduce this threat. In addition, deer exclusion fencing may be effective in protecting populations of federally-listed plant species.

- Conduct research that contributes to refuge goals and objectives, increases understanding of refuge resources, or facilitates resource management.

    - Determination – no effect or not likely to adversely affect (all listed species)

    - Rationale – Research will be designed and implemented in a manner that considers and avoids adverse effects to federally-listed species.

- Provide opportunities for priority public uses, including hunting, fishing, wildlife observation and photography, and environmental education and interpretation, where compatible with the goals and purposes of the refuge and mission of the National Wildlife Refuge System.

    - Determination – no effect or not likely to adversely affect (all listed species)

    - Rationale – In much of the proposed refuge area, these activities are compatible with the conservation of federally-listed species and will have no effect on these species. Where any of the priority public uses may conflict with the conservation of federally-listed endangered or threatened species, appropriate measures (e.g., buffers, seasonal restrictions, etc.) will be identified and implemented to avoid adverse effects.

- Construct, operate and maintain facilities, potentially including buildings, trails, parking areas, fishing access, interpretive outlooks, observational platforms, and roads. This may also include conversion of existing trails, roads, or buildings for public use.

    - Determination – no effect or not likely to adversely affect (all listed species)

    - Rationale – Where facility construction, operation or maintenance may affect federally-listed species, appropriate measures (e.g., buffers, seasonal restrictions, etc.) will be identified and implemented to avoid adverse effects.

Appendix C

Lists of Select Mammals, Birds, and Fish in the area of Cherry Valley, Monroe County, PA

Table C-1. Mammal species that are known to occur or likely occur within the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.

Taxonomic Family	Common name	Scientific name
Marsupial (Pouched mammals)	Opossum	*Didelphis virginiana*
Soricidae (Shrew)	Short-tailed shrew	*Blarina brevicauda*
	Masked shrew	*Sorex cinereus*
	Long-tailed or Rock shrew	*Sorex dispar*
	Smoky shrew	*Sorex fumeus*
	Water shrew	*Sorex palustris*
Talpidae (Mole)	Eastern mole	*Scalopus aquaticus*
	Hairy-tailed mole	*Parascalops breweri*
	Star-nosed mole	*Condylura cristata*
Vespertilionidae (Evening bat)	Big brown bat	*Eptesicus fuscus*
	Silver-haired bat	*Lasionycteris noctivagans*
	Red bat	*Lasiurus borealis*
	Hoary bat	*Lasiurus cinereus*
	Small-footed bat	*Myotis leibii*
	Northern long-eared bat	*Myotis septentrionalis*
	Little brown bat	*Myotis lucifugus*
	Indiana bat	*Myotis sodalis*
Lagomorpha (Rabbits and hares)	Snowshoe hare	*Lepus americanus*
	Eastern cottontail	*Sylvilagus floridanus*
	Appalachian cottontail	*Sylvilagus obscurus*
Sciuridae (Squirrel)	Woodchuck or Groundhog	*Marmota monax*
	Gray squirrel	*Sciurus carolinensis*
	Eastern chipmunk	*Tamias striatus*
	Red squirrel	*Tamiasciurus hudsonicus*
	Northern flying squirrel	*Glaucomys sabrinus*
	Southern flying squirrel	*Glaucomys volans*
Castoridae (Beaver)	Beaver	*Castor canadensis*
Cricetinae (New World rats and mice)	Woodrat or Pack rat	*Neotoma floridana*
	White-footed mouse	*Peromyscus leucopus*
	Deer mouse	*Peromyscus maniculatus*
	Red-backed vole	*Clethrionomys gapperi*
	Meadow vole	*Microtus pennsylvanicus*

Taxonomic Family	Common name	Scientific name
Cricetinae (cont.)	Pine vole	*Microtus pinetorum*
	Muskrat	*Ondatra zibethicus*
	Bog lemming	*Synaptomys cooperi*
Murinae (Old World rats and mice)	House mouse	*Mus musculus*
	Norway rat	*Rattus norvegicus*
Zapodidae (Jumping mice)	Woodland jumping mouse	*Napaeozapus insignis*
	Meadow jumping mouse	*Zapus hudsonius*
Erethizontidae (Porcupine)	Porcupine	*Erethizon dorsatum*
Canidae (Dog)	Coyote	*Canis latrans*
	Gray fox	*Urocyon cinereoargenteus*
	Red fox	*Vulpes vulpes*
Procyonidae (Raccoon)	Raccoon	*Procyon lotor*
Ursidae (Bear)	Black bear	*Ursus americanus*
Mustelidae (Weasel)	Ermine or Short-tailed weasel	*Mustela erminea*
	Long-tailed weasel	*Mustela frenata*
	Mink	*Mustela vison*
	Striped skunk	*Mephitis mephitis*
	River otter	*Lutra canadensis*
Felidae (Cat)	Bobcat	*Lynx rufus*
Cervidae (Deer)	White-tailed deer	*Odocoileus virginianus*

Table C-2. Priority Bird Species and their Conservation Status in the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania. *

Bird Species	BCC List(s)[1]	Pennsylvania State Status	Partners In Flight Status[2]	Audubon Watchlist[3, 4]
Breeding Species				
American kestrel				
Wood thrush	NE, BCR28		Tier IA	
Prairie warbler	NE, BCR28		Tier IA	Yellow Status
Cerulean warbler	NE, BCR28		Tier IB	Yellow Status
Black-throated green warbler				Yellow Status
Worm-eating warbler	NE, BCR28		Tier IA	
Louisiana waterthrush	BCR 28		Tier IIB	
Ovenbird				
Scarlet tanager			Tier IIB	
Common grackle				61% decline
Field sparrow			Tier IIA	68% decline
Possible Breeding Species				
American woodcock			Tier IB	
Bobolink				
Eastern meadowlark				72% decline
Habitat Users				
Osprey		Threatened		
Peregrine falcon	NE, BCR	Threatened		
Northern harrier		At-Risk		
Red-shouldered hawk				
Bald eagle		Endangered		
Migration				
Black duck				
Northern pintail			Tier IB	
Green-winged teal		PA Rare		77% decline
Wilson's snipe		PA Rare		
Wintering Range				
Rough-legged hawk				

Please see following page for description of Conservation Status designations

Table C-2 Description of Conservation Status Designations

[1] BCC = U.S. Fish and Wildlife Service Migratory Birds of Conservation Concern
NE = Northeast Region Birds of Conservation Concern BCC 2002 List
BCR 28 = Bird Conservation Region 28 (Appalachian Mountains) BCC 2002 List
(source: U.S. Fish and Wildlife Service. 2002. Birds of conservation concern 2002. Division of Migratory Bird Management, Arlington, Virginia. 99 pp. [Online version available at <http://migratorybirds.fws.gov/reports/bcc2002.pdf>]

[2] Tier IA = Species on the Partners in Flight Watch List which are of high continental concern and for which conservation in this region is critical to the overall health of the species

Tier IB = Species on the Partners in Flight Watch List which are of high continental concern and for which this region can contribute to rangewide conservation objectives where the species is found.

Tier IIA = Species that are of moderate continental priority (i.e., they are not on the Watch List), but are of high regional concern because they are experiencing population declines in the core areas of their range in this region.

Tier IIB = Species that are of moderate continental priority (i.e., they are not on the Watch List), but for which this region shares long-term responsibility for conservation.
(source: K. Rosenberg and B. Robertson. 2003. Partners in Flight Landbird Conservation Plan: Physiographic Area 17: Northern Ridge and Valley. Prepared for the American Bird Conservancy.
[http://www.partnersinflight.org/bcps/plan/pl_17_10.pdf])

[3] Yellow Status = this category includes species that are either declining or rare. These typically are species of national conservation concern.
(source: Butcher, G.S., D.K. Niven, A.O. Panjabi, D.N. Pashley, and K.V. Rosenberg. WatchList: The 2007 WatchList for United States Birds. American Birds 61:18-25.)
[Online] Retrieved 29 August 2008.
<http://web1.audubon.org/filerepository/science/speciesprofiles/watchlist/files/TechnicalReport.pdf>)

[4] Birds with percent decline information are considered common, but do have substantial population declines based on data analyzed by National Audubon Society between 1967 and 2007.
(source: National Audubon Society. 2007. "Common Birds in Decline." [Online] Retrieved March 2008.
<www.audubon.org/bird/stateofthebirds/cbid/browseSpecies.php>

Table C-3. Fish Species Documented in the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania (AC = Aquashicola Creek, BC = Brodhead Creek, CC = Cherry Creek, DR = Delaware River, MaC = Marshalls Creek, and MMC = McMichael Creek) ***

Common Name	Scientific Name	River/Creeks	Global Rank[1]	State Rank[2]
American brook lamprey	Lampetra appendix	MaC, MMC	G4	S3
American eel	Anguilla rostrata	BC, CC, DR, MMCk	G5	S5
American shad	Alosa sapidissima	DR	G5	S4
Black crappie	Pomoxis nigromaculatus	DR	G5	S4
Blacknose dace	Rhinichthys atratulus	AC, BC, CC, MMC	G5	S5
Bluegill	Lepomis macrochirus	DR, MMC	G5	S5
Bridle shiner	Notropis bifrenatus	MaC, AC (historical), MMC (introduced)	G3	S1
Brook trout	Salvelinus fontinalis	AC, CC, MMC	G5	S5
Brown bullhead	Ameiurus nebulosus	MMC	G5	S5
Brown trout	Salmo trutta	AC, BC, CC, MMC	G5	SE
Chain pickerel	Esox niger	DR	G5	S5
Channel catfish	Ictalurus punctatus	DR	G5	S3S4
Comely shiner	Notropis amoenus	DR	G5	S4
Common carp	Cyprinus carpio	BC, DR	G5	SE
Common shiner	Luxilus cornutus	AC, CC, DR, MMC	G5	S5
Creek chub	Semotilus atromaculatus	AC, BC	G5	S5
Creek chubsucker	Erimyzon oblongus	AC	G5	S4
Cutlip minnow	Exoglossum maxillingua	CC, MMC	G5	S5
Eastern mudminnow	Umbra pygmaea	MaC, MMC	G5	S3
Fallfish	Semotilus corporalis	AC, BC, CC, DR, MMC	G5	S5
Gizzard shad	Dorosoma cepedianum	DR	G5	S4
Golden shiner	Notemigonus crysoleucas	AC, MMC	G5	S5
Ironcolor shiner	Notropis chalybaeus	MaC, MMC (introduced)	G4	S1
Largemouth bass	Micropterus salmoides	BC, MMC	G5	S5
Longnose dace	Rhinichthys cataractae	AC, BC, CC, MMC	G5	S5
Margined madtom	Noturus insignis	BC	G5	S5
Pumpkinseed	Lepomis gibbosus	AC, CC, DR	G5	S5
Quillback carpsucker	Carpiodes cyprinus	DR	G5	S3S4

Common Name	Scientific Name	River/Creeks	Global Rank[1]	State Rank[2]
Rainbow trout	Oncorhynchus mykiss	CC	G5	SE
Redbreast sunfish	Lepomis auritus	DR	G5	S5
Redfin pickerel	Esox americanus americanus	AC, CC	G5	S4
Rock bass	Ambloplites rupestris	BC, CC, DR	G5	S5
Sea lamprey	Petromyzon marinus	DR, CC, MaC	G5	S3
Shield darter	Percina peltata	BC	G5	S5
Slimy sculpin	Cottus cognatus	CC, MMC	G5	S5
Smallmouth bass	Micropterus dolomieu	BC, DR	G5	S5
Spottail shiner	Notropis hudsonius	DR	G5	S5
Tesselated darter	Etheostoma olmstedi	AC, BC, CC, MMC	G5	S5
Walleye	Sander vitreus	DR	G5	S4
White catfish	Ameiurus catus	DR	G5	S4
White sucker	Catostomus commersoni	AC, BC, CC, DR, MMC	G5	S5
Yellow perch	Perca flavescens	DR	G5	S5

**** Please see following page for description of global and state rank designations.***

Table C-3 Description of Global and State Rank Designations

[1] G3 – Vulnerable – At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

G4 – Apparently Secure – Uncommon but not rare; some cause for long term concern due to declines or other factors.

G5 – Secure – Common; widespread and abundant

[2] S1– Critically Imperiled—Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2 - Imperiled—Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

S3 – Vulnerable—Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 – Apparently Secure – Uncommon but not rare; some cause for long term concern due to declines or other factors.

S5 – Secure – Common; widespread and abundant in the nation or state/province.

S3S4 – Range Rank —A numeric range rank is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank.

S3S4 indicates that there is uncertainty if the species is vulnerable (S3) or apparently secure but uncommon (S4).

SE -- An exotic (i.e., non-native species) established in the state; may be native in nearby regions

Sources: NatureServe Explorer (http://www.natureserve.org/explorer/nsranks.htm) Pennsylvania Natural Heritage Program, 2008; Hartzler, 2001;

Appendix D

FINAL
Economic Assessment for a Proposed Cherry Valley National Wildlife Refuge Pennsylvania

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Table of Contents

Introduction

The 109th U.S. Congress passed the Cherry Valley National Wildlife Refuge Study Act in 2006 (Study Act). The Study Act directs the U.S. Fish and Wildlife Service, which administers the National Wildlife Refuge System, to evaluate the biological value of natural communities within the valley to determine if the area merits protection as a national wildlife refuge (refuge).

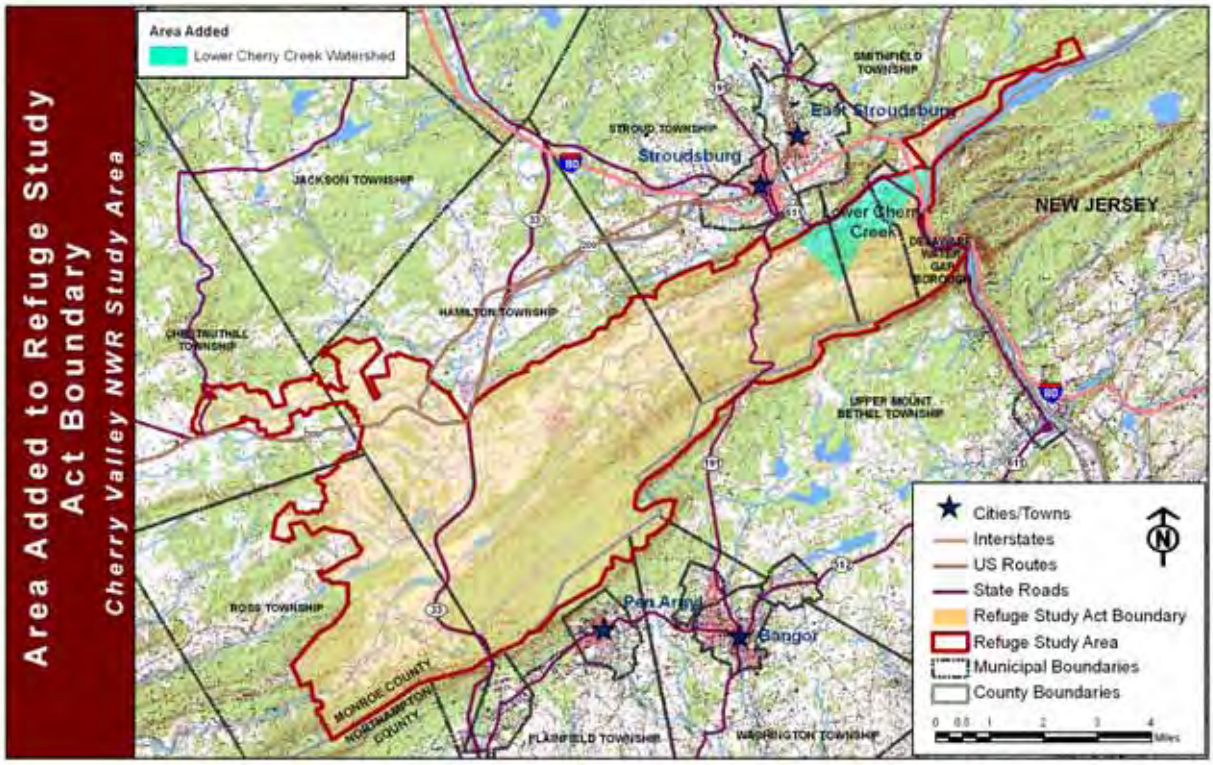
The purposed of this economic assessment is to provide a summary of the economic activities in the vicinity of the proposed refuge and to determine the extent to which such activities may be impacted by the establishment of a refuge.

Except for a narrow strip of land along the top of Kittatinny Ridge, Cherry Valley lies almost entirely within Monroe County, Pennsylvania, in the northeast portion of the State. Monroe County lies 90 miles north of Philadelphia, 75 miles west of New York and 116 miles east of Harrisburg. The county consists of 16 townships and 4 boroughs. The townships are governed by supervisors and the boroughs by councils. Outside of the boroughs, the county's 611 square miles is characterized as rural terrain, rolling hills, and farmlands.

The watershed of Cherry Valley encompasses a large segment of the Kittatinny Ridge, which is an important migration route for birds of prey throughout the Northeastern United States. Two federally owned parcels of land are contiguous to the Study Act boundary (Figure 1): the Delaware Water Gap National Recreation Area and a 700-acre segment of the Appalachian Trail that is owned by the National Park Service.

Figure 1 shows the general location of the refuge study boundary (as defined in the Study Act) within Monroe County. Approximately 30,000 acres fall within the boundary lines. The Service, in consultation with others, determined that a section of Lower Cherry Creek had likely been inadvertently left out of the refuge study boundary as defined in the Study Act. Therefore, an additional 1,500 acres were added to the refuge study boundary defined in the Study Act for our evaluation (Figure 1). We have defined this as the refuge study area (or Study Area). When possible, information from this section was included in the following analyses. The Study Area includes lands in six municipalities: Chestnuthill, Hamilton, Ross, Stroud, and Smithfield townships and Delaware Water Gap Borough.

Figure 1. Cherry Valley National Wildlife Refuge Study Act boundary, as presented in the legislation and the Lower Cherry Creek addition (see text for details).



Population Profile

The population of Monroe County has increased significantly over the years. In fact, development pressure is a primary concern in the area as it threatens the county's ecology and natural beauty. According to data provided by the U.S. Census, in 2006, Monroe County had a total population of 165,700. Since 2000, the population increased by nearly 20 percent. In contrast, the total State population increased by only one percent over a similar period. Population within the Cherry Valley proposed refuge boundary is estimated to be about 9,300 or approximately seven percent of the county's 2000 population. Table 1 provides a summary of how population has changed since 2000, within the Study Act boundary and compares this change to the overall change for Monroe County and the Commonwealth of Pennsylvania.

Table 1. Population Estimates for the Cherry Valley National Wildlife Refuge Study Act boundary, Monroe County, and Pennsylvania.

	2000	2006	% change
Study Act Boundary	9,304	n/a	
Monroe County	138,687	165,685	19.5%
Pennsylvania	12,281,054	12,440,621	1.3%

Note – Study Act boundary population estimates based on census block groups and Division of Economics GIS analysis. June, 2008. Study Act boundary population estimate excludes Lower Cherry Valley addition. Source: www.fedstats.gov/qf/states/42/42089.html

A significant amount of population growth is attributable to an influx of workers and families from the greater New York metropolitan area seeking lower cost housing.[1] Monroe County commuting time is over 30 percent higher than the state average. Many of these workers commute via Martz Trailways into Manhattan, nearly a two-hour journey across Interstate 80. The majority of the Monroe County newcomers reside in new housing developments built outside of the Cherry Valley area.

Table 2 presents total population estimates in years 1990 and 2000 for the municipalities within the Study Act boundary along with an estimate of the population residing within the boundary lines. Of the 9,300 individuals residing within the Study Act boundary, over 60 percent resided in either Hamilton or Ross townships. Population increases were greatest in the townships of Chestnuthill, Smithfield, and Stroud. For the latter two, population increases within the Study Act boundary were twice that of the townships in general.

Overall, between 1990 and 2000, the population within the Study Act boundary increased 28 percent. This rate was less than the total growth rate for the townships that have property included in the refuge (36 percent) and for Monroe County (45 percent), indicative of the relative rural nature of the area. Nonetheless, a 28 percent change reflects significant change for the area. By comparison, state population changed by only 3.4 percent over a similar period, while overall U.S. population changed by 13 percent, which reflects huge population growth in the Southeast and West.

[1] Next Stop: Martz Trailways Bus from Mount Pocono, Pa., to the Port Authority in Manhattan, by Billie Cohen, The New York Times, January 28, 2008.

Table 2. Population for Monroe County and Municipalities in the Cherry Valley National Wildlife Refuge Study Act Boundary, Pennsylvania.

	Total Population			Study Act Boundary Population		
	1990	**2000**	**Change**	**1990**	**2000**	**Change**
Chestnuthill	8,554	14,598	71%	969	1,642	69%
Delaware Water Gap	436	562	29%	113	52	-54%
Hamilton	6,511	7,004	8%	3,537	3,509	-1%
Ross	3,671	5,768	57%	1,629	2,288	40%
Smithfield	6,106	6,692	10%	470	841	79%
Stroud	11,583	15,515	34%	558	972	74%
Municipality Total	**36,861**	**50,139**	**36%**	**7,276**	**9,304**	**28%**
Monroe County Total	95,709	138,572	45%			
PA Total	11,881,643	12,281,054	3.4%			
U.S. Total	248,709,873	281,421,906	13.2%			

Note: Refuge population estimates exclude Lower Cherry Valley addition.
Source: 1990CensusMuniBnds.xls; CensusBlocks 2000 MuniBounds; US FWS Division of Economics GIS analysis (Monroe County Population). May 29, 2008.

Monroe County Economic Profile

This section provides a general overview of the economic environment of Monroe County. The characterization is based on data collected and summarized by several sources, including the U.S. Census Bureau, the Bureau of Labor Statistics, and the U.S. Department of Agriculture. In general, county-level statistics are the geographically finest level of data readily available. After profiling the economic environment of Monroe County, this analysis will look at land parcel data provided by Monroe County to determine the degree to which economic sectors within the county could be most affected should land use be converted to refuge status.

Employment

Total employment in Monroe County in 2005 was 75,728.[2] Since 2001, Monroe County has experienced a net increase of over 7,600 new jobs. Over 40 percent of total employment in 2005 occurred in one of three economic sectors – government-related, retail trade, and services. Of the three, government and government enterprises employed the greatest number of workers in 2005 (12,748), which represents almost 17 percent of total employment. Less than one-half of one percent of total county employment (264) worked on farms. Since 2001, farming employment has decreased by about four percent.

The fastest growing employment sectors in the county were educational services, and transportation and warehousing. The total employment in these sectors grew by 88 percent and 43 percent, respectively, since 2001. In addition to farming, Monroe County also saw a decrease in employment in the manufacturing and wholesale trade sectors. All other sectors had a net gain in employment between 2001 and 2005. Table 3 provides detailed description of employment in Monroe County in the years 2001 and 2005.

[2] Source: Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce; CA25N Footnotes; http://www.bea.gov/regional/reis/CA25Nfn.cfm; Accessed December 13 2007.

Table 3. Employment by Industry, Monroe County, Pennsylvania.

	2005	% of total	2001	% of total	% Change 2001 - 2005
Total employment	75,728	100.0%	68,112	100.0%	11.2%
Farm employment	264	0.3%	275	0.4%	-4.0%
Nonfarm employment	75,464	99.7%	67,837	99.6%	11.2%
Forestry, fishing, related activities, and other	65	0.1%	n/a	n/a	n/a
Mining and Utilities	179	0.2%	135	0.2%	32.6%
Construction	5,691	7.5%	4,828	7.1%	17.9%
Manufacturing	5,373	7.1%	5,423	8.0%	-0.9%
Wholesale trade	1,387	1.8%	1,401	2.1%	-1.0%
Retail trade	10,932	14.4%	10,314	15.1%	6.0%
Transportation and warehousing	3,888	5.1%	2,708	4.0%	43.6%
Information, Finance, Insurance, and Real Estate	6,591	8.7%	6,474	9.5%	1.8%
Professional, management, admin & waste services	7,668	10.1%	6,511	9.6%	17.8%
Educational services	852	1.1%	452	0.7%	88.5%
Health care and social assistance	6,375	8.4%	5,192	7.6%	22.8%
Arts, entertainment, and recreation	2,686	3.5%	2,144	3.1%	25.3%
Accommodation and food services	6,831	9.0%	7,339	10.8%	-6.9%
Other services, except public administration	4,198	5.5%	3,750	5.5%	11.9%
Government and government enterprises	12,748	16.8%	11,048	16.2%	15.4%

Source: Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce; CA25N Footnotes; http://www.bea.gov/regional/reis/CA25Nfn.cfm. Accessed December 13 2007

Payroll

Government-related services, manufacturing, and retail trade comprised the highest payrolls of the Monroe County industries. Collectively, these three sectors accounted for over 53 percent of the total employment earnings within the county. None of these industries, however, represented the fastest growing sectors over the previous five years. Total earnings increased the greatest in educational services (161 percent), transportation and warehousing (109 percent) and wholesale trade (76 percent). With the exception of wholesale trade, the pace of the earnings increase mirrored the pace of the job increases. Agricultural earnings in the county were extremely low, less than one-tenth of a percent of total county earnings. Table 4 shows the total earnings for Monroe County by economic sector.

Table 4. Earnings by Industry, Monroe County, Pennsylvania.

	2005 ($1,000)	% of Total	2001 ($1,000)	% of Total	% Change
Farm compensation	$ 787	0.0%	$ 794	0.0%	-0.9%
Nonfarm compensation	$ 2,503,292	100.0%	$ 1,818,099	100.0%	37.7%
Private compensation	$ 1,797,273	71.8%	$ 1,328,523	73.0%	35.3%
Mining and Utilities	$ 9,637	0.4%	n/a	n/a	n/a
Construction	$ 144,764	5.8%	$ 108,989	6.0%	32.8%
Manufacturing	$ 387,123	15.5%	$ 282,665	15.5%	37.0%
Wholesale trade	$ 90,302	3.6%	$ 51,122	2.8%	76.6%
Retail trade	$ 231,906	9.3%	$ 186,509	10.3%	24.3%
Transportation and warehousing	$ 164,079	6.6%	$ 78,431	4.3%	109.2%
Information, Finance, Insurance, and Real Estate	$ 122,301	4.9%	$ 117,841	6.5%	3.8%
Professional, Management, Admin & Waste Services	$ 171,233	6.8%	$ 122,087	6.7%	40.3%
Educational services	$ 15,870	0.6%	$ 6,079	0.3%	161.1%
Health care and social assistance	$ 226,030	9.0%	$ 154,554	8.5%	46.2%
Arts, entertainment, and recreation	$ 38,799	1.5%	$ 27,305	1.5%	42.1%
Accommodation and food services	$ 115,715	4.6%	$ 122,267	6.7%	-5.4%
Other services, except public administration	$ 79,474	3.2%	$ 59,636	3.3%	33.3%
Government and government enterprises	$ 706,019	28.2%	$ 489,576	26.9%	44.2%

Source: Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce, CA06N Footnotes http://www.bea.gov/regional/reis/CA06Nfn.cfm

Housing

According to the 2000 U.S. Census, Monroe County had a total of 67,581 total housing units.[3] By 2006, this number increased to 77,175 units, an increase of 14 percent. In 2000, the Census reported the total number of households to be 49,454, which implied a total of 18,127 vacant housing units. (While this number appears high, it reflects both the high number of existing seasonal units along with new housing construction and not yet occupied.)

Since 2000, Monroe County has permitted slightly over 9,400 new single family homes. The pace of new construction peaked in 2003 at 1,679 permits. In contrast, the average cost of new, single-family residential structures has risen consistently over the years. The latest average cost of a new single family home is $212,262 compared to $140,373 in 2000.

The pace of new housing construction has declined significantly in recent years. In 2007, the total number of new permits issued declined by over 30 percent from the year earlier, signifying a strong decline in demand. The county experienced record foreclosures in 2007 and looks to set a new record in 2008. According to a recent article in the Pocono Record there were 1,253 foreclosure filings in 2007.[4]

Table 5. Single Family Home Construction, Monroe County, Pennsylvania.

Year	Permits	Annual Change	Total Cost	Annual Change	Avg Cost	Annual Change
2007	900	-36%	$191,036,244	-39%	$212,262	5%
2006	1,399	-13.1%	$311,573,822	-0.8%	$222,712	14.2%
2005	1,610	-2.1%	$314,059,152	2.4%	$195,068	4.7%
2004	1,645	-2.0%	$306,610,397	6.9%	$186,389	9.2%
2003	1,679	6.7%	$286,709,547	13.2%	$170,762	6.0%
2002	1,573	4.2%	$253,352,319	12.9%	$161,063	8.4%
2001	1,510	2.0%	$224,358,519	7.9%	$148,582	5.8%
2000	1,481	8.3%	$207,892,568	8.4%	$140,373	0.0%
1999	1,367	21.0%	$191,829,977	39.6%	$140,329	15.4%
1998	1,130	0.0%	$137,446,018	0.0%	$121,634	0.0%

Source: U.S. Census Bureau, *http://www.census.gov/const/www/permitsindex.html*

[3] U.S. Census Bureau, U.S. Department of Commerce, http://censtats.census.gov/bldg/bldgprmt.shtml.
[4] Monroe Smashed Home Foreclosure Record with 1,253 filings in 2007, by David Pierce, Pocono Record Writer, January 2, 2008 and County's Foreclosure Filings May Hit New High in 2008, by David Pierce, Pocono Record Writer, April 13, 2008.

Agriculture

In 2002, Monroe County had a total of 324 farms, up from 257 farms in 1997.[5] Land in farms also increased, from 29,877 acres in 1997 to 32,938 acres in 2002. The total market value of production from all farms was $6.6 million. Crop sales accounted for 70 percent of this total ($4.7 million), livestock the remaining 30 percent ($1.9 million). Top ranked sales for commodities were for nursery products ($2.3 million) and aquaculture ($1.0 million). Table 6 presents latest U.S. Census figures for commodity sales.

Table 6. Value of Sales by Commodity Group (in $1,000), Monroe County, Pennsylvania.

Commodity Group	**Sales ($1,000)**
Grains, oilseeds dry beans and dry peas	$882
Tobacco	-
Cotton and cottonseed	-
Vegetables, melons, potatoes, and sweet potatoes	$641
Fruits, tree nuts, and berries	$242
Nursery,greenhouses, floriculture, and sod	$2,348
Cut Christmas trees and short rotation woody crops	$119
Other crops and hay	$454
Poultry and eggs	$17
Cattle and calves	$324
Milk and dairy	$360
Hogs and pigs	$13
Sheep, goats, and related products	$18
Horses, ponies, mules, burros, and donkeys	$67
Aquaculture	$1,014
Other animals and animal products	$82

Source: 2002 Census of Agriculture, County Profile, U.S. Dept. of Agriculture, Pennsylvania Agriculture Statistics Service.

Table 7 shows the total breakdown, by acreage, of the top crop items for Monroe County. Slightly less than one-third of agricultural land in the county was used for the production of one of four items. Land use for the production of forage (e.g., hay) topped the list at 5,314 acres.

[5] 2002 Census of Agriculture, U.S. Department of Agriculture.

Table 7. Top Crop Items (by acres) in Monroe County, Pennsylvania.

Item	Acres
Forage	5,314
Corn (for grain)	3,536
Soybeans	1,843
Oats	771
Nursery stock	684
Total	12,148

Source: 2002 Census of Agriculture, County Profile, USDA.

Cherry Valley Land Use

While specific economic data within the Cherry Valley area is not readily available, Monroe County does collect and maintain data concerning parcel characteristics. Among other characteristics, the parcel data set includes such descriptive characteristics as size, total assessment, ownership, and use. By carefully reviewing these data, one can make some general assumptions concerning the economy of the Cherry Valley area and its relative contribution to the overall larger economy of Monroe County.

Land use within the Study Area can be classified roughly into ten general categories, which are identified in Table 8. For the purposes of this analysis, these categories were further classified into one of two groups: open space parcels and developed space parcels. The exhibit shows that developed parcels, which include residential and industrial properties, collectively account for about one-third of the Study Area. Residential properties, alone, cover nearly 20 percent of the Study Area. Open space parcels, which include agriculture, parks, forest, vacant, and in this case, property owned by utilities, together account for nearly 70 percent of the Study Area.[6]

In total, the Study Area, including the Lower Cherry Valley addition, consists of 4,159 unique parcels. These parcels total over 34,000 acres. Many parcels extend beyond the borders of the Study Area, which explains the why the total parcel acreage exceeds the acreage of the Study Area.

[6] Land classified for use by utilities comprises 10 percent of the total. This area is largely reflective of the land holding by PA American Water, which owns over 3,000 acres of nearly contiguous property in the southwestern portion of the proposed refuge boundary. This land remains largely undeveloped.

Table 8. General Land Use Characteristics within the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.

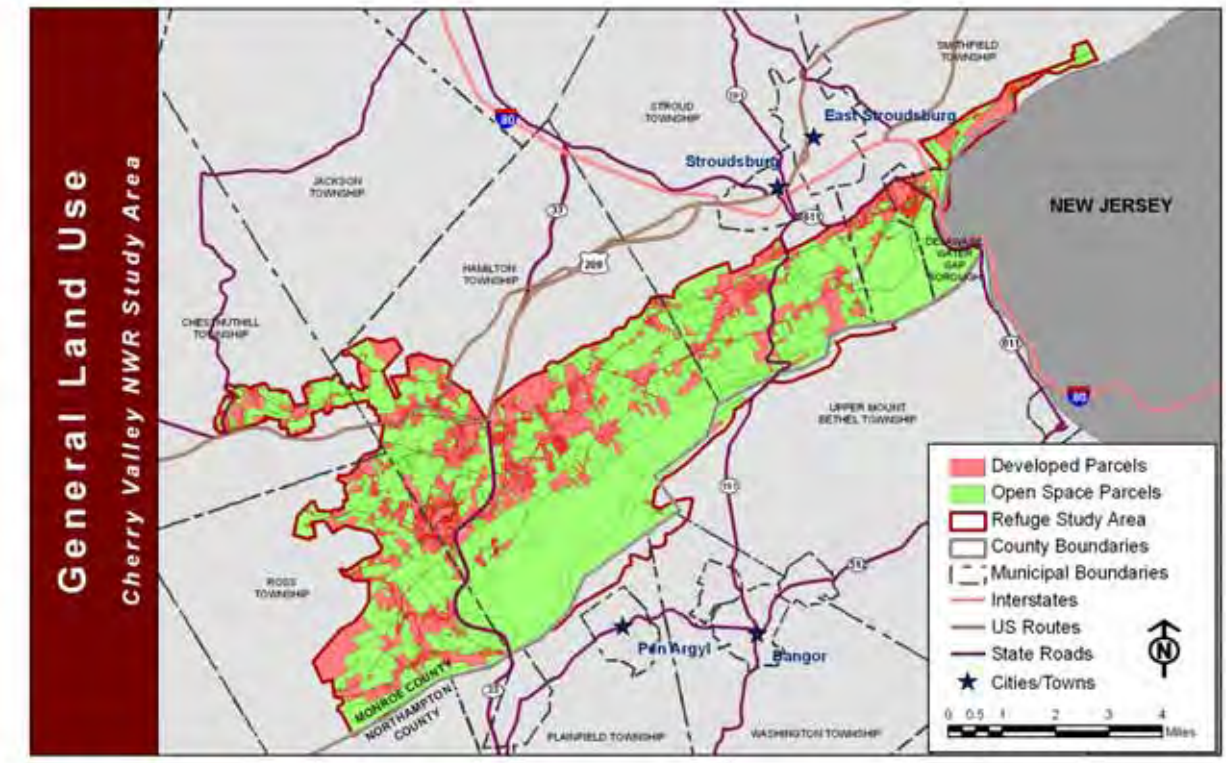
Land Category	Land Use	Acres[1]	Percent of Total
"Open Space" Parcels			
	Agriculture	5,634	16.2%
	Communication/Transportation/Utilities	3,444	9.9%
	Forest	4,879	14.0%
	Public/Private Parks	5,248	15.1%
	Vacant	4,563	13.1%
	subtotal	**23,768**	**68.2%**
"Developed" Parcels			
	Hotels/Camps	761	2.2%
	Industrial	2,423	6.9%
	Residential	7,012	20.1%
	Retail/Services	646	1.9%
	Other	259	0.7%
	subtotal	**11,101**	**31.8%**
Grand Total		**34,869**	**100.0%**

[1] Total acres exceed total area of the Study Area because several border parcels extend beyond the Study Area boundary.
Source: Monroe County parcel data, 2007. GIS analysis conducted by U.S. Fish and Wildlife Service, Division of Economics.

Figure 2 shows how land use is generally distributed across the Study Area. The exhibit shows that developed parcels (e.g., residential and industrial) are primarily located along Cherry Valley road and areas to the northeast of the road. Open space parcels generally lie on the southeast side of Cherry Valley road up to Kittatinny Ridge. Hamilton Township, alone, accounts for nearly 50 percent of the total Study Area acreage. According to Monroe County assessment records, the total assessed value of parcels within the Study Area was $100.3 million in 2007. Sixty percent of the total is

associated with a single land use category – residencies. A more detailed discussion of general land use characteristics, by land use category, follows.

Figure 2. Location of Developed and Open Space Parcels within the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.



Source: Monroe County Land Use data. Analysis conducted by Division of Economics, U.S. Fish and Wildlife Service, May 2008.

Developed Land

Industrial Parcels

Industrial parcels are clustered in three main locations within the Study Area. Two clusters lie right on the border of the boundary line. There are 32 industrial parcels, in total and collectively accounting for 2,423 acres, or about seven percent of the parcel land cover. Total assessment value of these properties is over $2.3 million.

The first noticeable cluster lies in Ross Township, at the southwest border of the Study Area. This cluster consists of three parcels, the largest of which is owned by the Lehigh Portland Cement Company. This parcel is operated as a quarry and is reported to be 1,538 acres in size. The parcel was assessed at nearly $250 thousand.

The second cluster is located in Hamilton Township, along the northern border of the Study Area. This cluster largely consists of multiple, adjacent parcels owned by Eureka Stone Quarry. The company own 585 acres within the Study Area and their property is currently assessed at $321 thousand.

The third cluster of industrial property is located just to the southeast of the Eureka parcels. This cluster is approximately 185 acres and is assessed at $177 thousand. Two parcels, totaling 72 acres, are owned by the Hamilton Stone Company, while the remaining parcels are owned by the Herbert Imbt/Fairmont Development Corporation, which is also operated as a quarry.

Table 9. Industrial Lands Within the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.

Municipality	Acres	% of Study Area	2007 Total Assessment
Chestnuthill	0	0%	$ 8,240
Delaware Water Gap	34	3%	$ 853,980
Hamilton	771	5%	$ 658,710
Ross	1,591	20%	$ 500,440
Smithfield	27	1%	$ 336,750
Stroud	0	0%	$ -
Grand Total	**2,423**	**7%**	**$ 2,358,120**

Residential Parcels

Residential parcels, occupy over 7,000 acres of the Study Area. This amounts to 20 percent of the Study Area. Distribution of residential parcels is relatively uniform across the municipalities, with the exception of Delaware Water Gap Borough and Smithfield Township. Collectively, residential parcels are assessed at slightly over $60 million, which computes to about 60 percent of the total assessment value of all the parcels within the Study Area.[7] There are over 2,500 residential parcels. The median parcel size is slightly over one acre with a corresponding median assessment of $23,500, which based on Pennsylvania's current market index, computes to a median current market value of $183,470.[8]

Nearly 30 percent of Chestnuthill Township's acreage within the Study Area is classified as residential. Hamilton, Ross, and Stroud also have about 20 percent of their Study Area acres classified as residential parcels. There are 33 parcels greater than 25 acres. The largest residential parcel is 110 acres and is located in Hamilton Township. Table 10 shows the total amount of residential acres and total value of residential property by township, within the Study Area.

Table 10. Residential Lands Within the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.

Municipality	Acres	% of Study Area	2007 Total Assessment
Chestnuthill	428	30%	$ 3,134,470
Delaware Water Gap	89	9%	$ 3,766,570
Hamilton	3,087	20%	$ 28,634,750
Ross	1,770	22%	$ 11,092,620
Smithfield	411	11%	$ 5,190,540
Stroud	1,228	24%	$ 8,272,910
Grand Total	**7,012**	**20%**	**$ 60,091,860**

[7] Monroe County latest reassessment occurred in 1988 and is the source of the database.
[8] The State of Pennsylvania uses a multiplier of 7.81 to estimate the current market value of assessed property. Source: Email from George Basila, Monroe County Planning Commission to Edward Maillett , U.S. Fish and Wildlife Service, "Assessment units ?" on 9 June 2008.

Retail/Services

Land parcels associated with retail or service establishments are primarily located near residential areas. Hamilton and Smithfield townships have the greatest amount of acreage in these sectors (290 and 196 acres, respectively). While the Hamilton Township parcels are numerous and contain no large parcels (the largest parcels are less than 50 acres and are associated with church groups), the majority of the acreage in Smithfield consist of a single parcel owned by the Manwalamink Water Company (174 acres). This company is affiliated with the Shawnee on Delaware Corporation. The parcel, while classified as developed, likely supports many refuge-related characteristics.

Table 11. Retail/Service Lands Within the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.

Municipality	Acres	% of Study Area	2007 Total Assessment
Chestnuthill	65	5%	$ 1,106,910
Delaware Water Gap	21	2%	$ 817,910
Hamilton	290	2%	$ 1,947,660
Ross	27	0%	$ 403,300
Smithfield	196	5%	$ 687,090
Stroud	47	1%	$ 165,320
Grand Total	**646**	**2%**	**$ 5,128,190**

Hotels/Camps

Hotel and camp parcels collectively comprise 761 acres within the Study Area and have a current assessment of over $8.7 million. Smithfield Township contains 263 of the acres. Shawnee on Delaware Corporation owns the vast majority of this property. Other large hotel/camp property owners include 181 acres owned by Forte, Inc., at the border of the Study Area in Stroud Township and 85 acres owned by the Saylors Lake Fishing Association in Hamilton Township. Although initially classified as developed property, much open space area permeates these parcels and may support desirable refuge characteristics.

Table 12. Hotel/Camp Lands Within the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.

Municipality	Acres	% of Study Area	2007 Total Assessment
Chestnuthill	41	3%	$ 218,630
Delaware Water Gap	65	6%	$ 996,860
Hamilton	178	1%	$ 1,418,660
Ross	17	0%	$ 220,730
Smithfield	263	7%	$ 5,175,560
Stroud	196	4%	$ 722,090
Grand Total	**761**	**2%**	**$ 8,752,530**

Other Classified Parcels

Approximately 259 acres classified as "otherwise" have development characteristics. Land use in this category may include scrap yards and educational and government services. In total, these parcels account for about two percent of the Study Area. The relatively large percent of parcels in Delaware Water Gap is comprised of property owned primarily by the Delaware River Joint Toll Bridge Commission.

Table 13. Other Classified Lands Within the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.

Municipality	Acres	% of Study Area	2007 Total Assessment
Chestnuthill	9	1%	$ 151,410
Delaware Water Gap	31	3%	$ 234,380
Hamilton	46	0%	$ 798,710
Ross	21	0%	$ 201,160
Smithfield	49	1%	$ 1,250,430
Stroud	104	2%	$ 184,230
Grand Total	**259**	**1%**	**$ 2,820,320**

Open Space

Agriculture

Agricultural parcels occupy a total of 5,634 acres. Collectively, this represents about 16 percent of the total Study Area. These lands primarily lie along the valley floor, north of Cherry Valley Road and to the west of PA 33. There are nearly 140 agricultural parcels that range in size from over 200 acres to an acre. The average agricultural parcel size is about 40 acres. The total assessment of agricultural parcels in the Study Area is about $6.1 million. Hamilton Township contains the greatest amount (2,907 acres) of agricultural acreage of all the municipalities within the Study Area. Over 20 percent of the parcel acreage in Chestnuthill is classified as agriculture. Hamilton, Ross, and Stroud townships also have high percentages of agricultural use. Table 14 details the breakdown of agricultural land by municipality, along with assessment value.

Table 14. Agricultural Lands Within the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania

Municipality	Acres	% of Study Area	2007 Total Assessment
Chestnuthill	325	23%	$ 203,600
Delaware Water Gap	0	0%	$ -
Hamilton	2,889	19%	$ 3,458,770
Ross	1,445	18%	$ 1,153,040
Smithfield	0	0%	$ -
Stroud	976	19%	$ 1,222,830
Grand Total	**5,634**	**16%**	**$ 6,038,240**

Communications/Transportation/Utilities

Over 3,400 acres of the Study Area are classified as either communication, transportation, or utility land. Collectively, these parcels represent about ten percent of the Study Area. However, one company, the Pennsylvania American Water Company owns the majority of this land. Specifically, this company owns about 3,050 contiguous acres in Hamilton Township. This property remains largely undeveloped due to unfulfilled previous development plants. It is currently assessed by the county near $1.2 million.

Table 15. Communication/Transportation/Utility Lands Within the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania

Municipality	Acres	% of Study Area	2007 Total Assessment
Chestnuthill		0%	$ -
Delaware Water Gap	40	4%	$ 181,520
Hamilton	3,121	20%	$ 1,183,910
Ross	242	3%	$ 118,630
Smithfield	34	1%	$ 74,850
Stroud	7	0%	$ 24,100
Grand Total	**3,444**	**10%**	**$ 1,583,010**

Forestry

There are nearly 5,000 acres of land identified as forest parcels within the Study Area (Table 16). The majority of these parcels lie in Hamilton, Ross, and Stroud townships. Stroud Township has nearly 25 percent of its total Study Area acreage classified as forest. The ownership of these parcels is numerous. There are over 100 forest parcels, the majority of which are owned by individuals. Parcel sizes range from less than one acre to 150 acres. The average parcel size is 30 acres.

Table 16. Forestry Lands Within the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.

Municipality	Acres	% of Study Area	2007 Total Assessment
Chestnuthill	235	16%	$ 357,130
Delaware Water Gap		0%	$ -
Hamilton	1,902	12%	$ 2,435,690
Ross	1,302	16%	$ 1,136,120
Smithfield	82	2%	$ 111,250
Stround	1,357	27%	$ 1,259,460
Grand Total	**4,879**	**14%**	**$ 5,299,650**

Parklands

There are over 5,000 acres in the Study Area classified as parkland by Monroe County. This constitutes about 15 percent of the total Study Area. The U.S. Government owns nearly 4,000 acres of parkland parcels, most of which lie in Smithfield and Stroud townships. The Nature Conservancy is the second largest landowner of park parcels. They own about 400 acres within the Study Area. Other large landowners (i.e., greater than 100 acres) of parklands include the Commonwealth of Pennsylvania, the Pocono Heritage Land Trust, and Smithfield Township.

Table 17. Parklands Within the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania

Municipality	Acres	% of Study Area	2007 Total Assessment
Chestnuthill	145	10%	$ 114,340
Delaware Water Gap	542	54%	$ 312,630
Hamilton	1,970	13%	$ 757,750
Ross	455	6%	$ 198,810
Smithfield	1,551	40%	$ 1,490,050
Stround	584	11%	$ 519,380
Grand Total	**5,248**	**15%**	**$ 3,392,960**

Vacant Lands

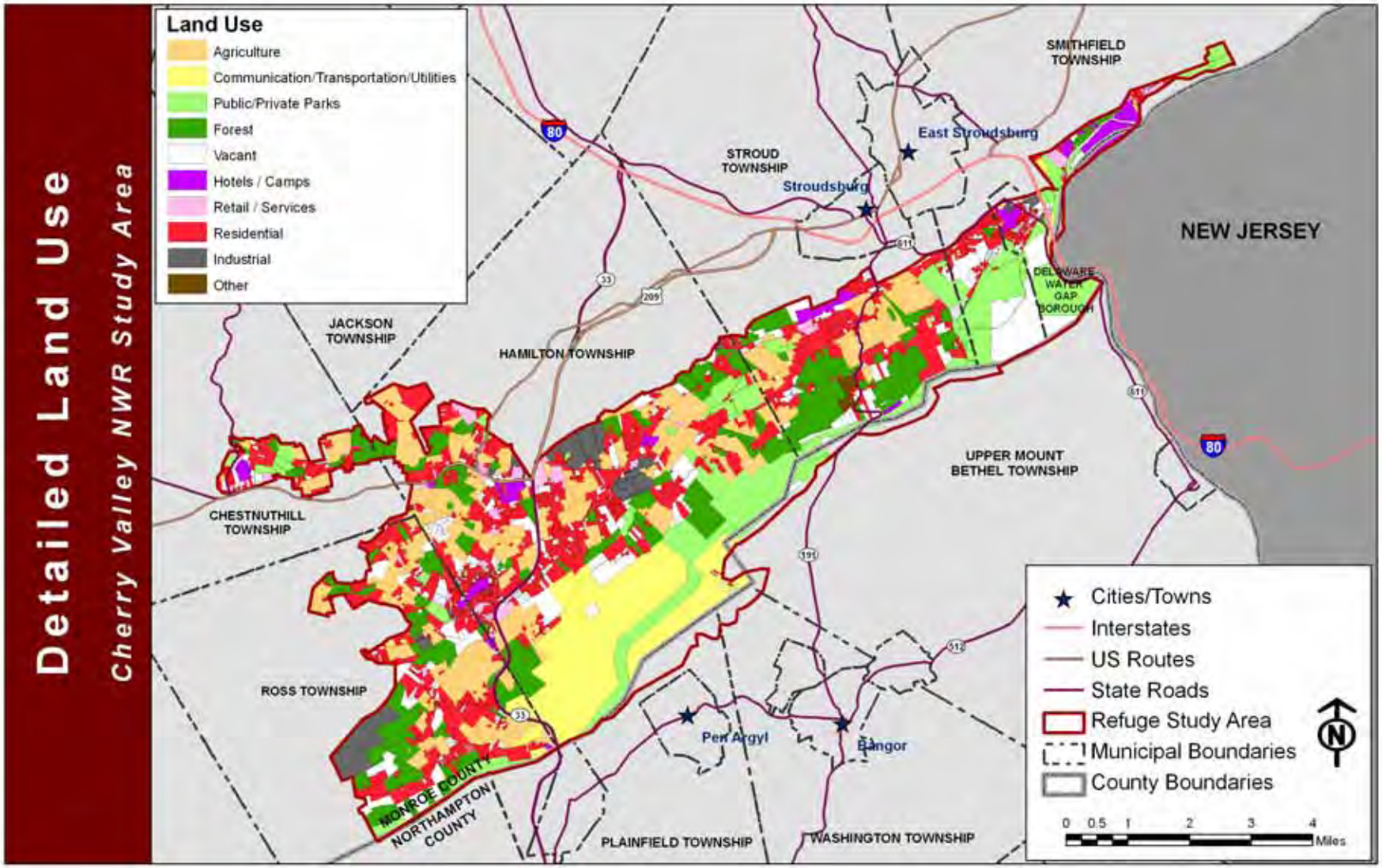
There are 789 parcels classified as vacant by Monroe County within the Study Area. In total, vacant parcels make up about 13 percent of the Study Area. Smithfield Township has the largest percentage of its Study Area acres classified as vacant. The largest parcels are located in Smithfield Township and Delaware Water Gap Borough and are owned by the Borough of Delaware Water Gap. These two adjacent parcels total 660 acres (512 acres and 148 acres, respectively) and are bounded by property owned by the U.S. National Park Service.

Table 18. Vacant Parcels Within the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.

Municipality	Acres	% of Study Area	2007 Total Assessment
Chestnuthill	177	12%	$ 366,900
Delaware Water Gap	187	19%	$ 413,240
Hamilton	1,266	8%	$ 1,849,660
Ross	1,106	14%	$ 609,340
Smithfield	1,234	32%	$ 1,011,830
Stround	593	12%	$ 550,630
Grand Total	**4,563**	**13%**	**$ 4,801,600**

Figure 3, below, illustrates in greater detail the location of the parcels within the Study Area by specific land-use.

Figure 3. Land Use by Parcel within the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.



Tax Revenue Impacts

Monroe County and its municipalities derive the majority of their tax revenues from real estate taxes. Real estate taxes fund school districts, libraries, and county and municipal government services. Monroe County uses millage to compute real estate taxes. Each mill represents one dollar in taxes for every $1,000 in value. Monroe County calculates current market value of property, for tax purposes, to be four times the current assessed value.[9] The actual current market value of property in Monroe County, based on more recent real estate sales, is estimated at 7.81 times the current assessed value.[10]

Table 19 shows the total assessed value and calculated current market value (using the more accurate 7.81 multiplier) for all of the real estate parcels located within the Study Area. Current market value for all parcels is estimated to be $783 million based on a total assessment of $100.3 million. Total tax revenue on these properties is about $63.4 million.

Table 19. Estimated 2008 Real Estate Tax Receipts For Parcels lying within the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.

Municipality	2007 Assessment	Estimated Market Value[1]	2008 millage[2]	Estimated Tax Receipts[3]
Chestnuthill	$ 5,661,630	$ 44,217,330	0.153	$ 3,464,918
Delaware Water Gap	$ 7,577,090	$ 59,177,073	0.16835	$ 5,102,412
Hamilton	$ 43,144,270	$ 336,956,749	0.15375	$ 26,533,726
Ross	$ 15,634,190	$ 122,103,024	0.1505	$ 9,411,782
Smithfield	$ 15,328,350	$ 119,714,414	0.16952	$ 10,393,848
Stroud	$ 12,920,950	$ 100,912,620	0.16475	$ 8,514,906
Grand Total	**$ 100,266,480**	**$ 783,081,209**		**$ 63,421,592**

[1] Estimated current market value computed using State multiplier of 7.81 provided by Monroe County Planning Commission, June 2008.
[2] Millage rates provided by Monroe County Assessors Office, September 2008.
[3] Estimated tax receipts computed as follows: (2007 Assessment)* 4 * millage.

The fiscal impact to Monroe County and its municipalities due to the establishment of a refuge will depend on both the quantity of land acquired and the rate at which it is acquired. While land owned by the U.S. Government is not taxable by state or local

[9] Current assessed values are based on Monroe County's last reassessment, conducted in 1988.
[10] Source: Email from George Basila, Monroe County Planning Commission to Edward Maillett , U.S. Fish and Wildlife Service, "Assessment units ?" on 9 June 2008.

authorities, the federal government has a program in place to compensate local governments for foregone tax revenues. The Refuge System typically makes a revenue sharing payment, annually, to local governments. The payment made depends on the revenues that accrue to the Refuge System and the proportion of those revenues that are appropriated by Congress for revenue sharing purposes. In recent times, the payment has been less than what the government may have received through normal taxation. It should be noted that the property that is most highly assessed within the Study Area (e.g., residential, industrial, and retail) represent those parcels that have the least desirable characteristics, from a national wildlife refuge perspective.

Table 20 shows the total breakdown of the current real estate assessment by land use. Open space parcels account for 21 percent of the total Study Area parcel assessments, while developed parcels account for the remaining 79 percent. This contrasts to the total acreage of open and developed space parcels, which accounted for nearly 70 and 30 percent of the total Study Area, respectively. Consequently, given the likelihood of limited funding and the fact that open space parcels would most likely be targeted, establishing a refuge will likely have minimal fiscal impact on the county and municipalities in the near future.

Table 20. Estimated Tax Receipts by Land Use Classification within the Cherry Valley National Wildlife Refuge Study Area, Monroe County, Pennsylvania.

Land Category	Land Use	2007 Assessment	Percent of Grand Total Assessment	Current Market Value[1]	Estimated Tax Receipts[2]
	Agriculture	$ 6,038,240	6.0%	$ 47,158,654	$ 3,864,474
	Communication/Transportation/Utilities	$ 1,583,010	1.6%	$ 12,363,308	$ 1,013,126
	Forest	$ 5,299,650	5.3%	$ 41,390,267	$ 3,391,776
	Public/Private Parks	$ 3,392,960	3.4%	$ 26,499,018	$ 2,171,494
Open Space	Vacant	$ 4,801,600	4.8%	$ 37,500,496	$ 3,073,024
Parcels	**subtotal**	**$ 21,115,460**	**21.1%**	**$ 164,911,743**	**$ 13,513,894**
	Hotels/Camps	$ 8,752,530	8.7%	$ 68,357,259	$ 5,601,619
	Industrial	$ 2,358,120	2.4%	$ 18,416,917	$ 1,509,197
	Residential	$ 60,091,860	59.9%	$ 469,317,427	$ 38,458,790
	Retail/Services	$ 5,128,190	5.1%	$ 40,051,164	$ 3,282,042
Developed	Other	$ 2,820,320	2.8%	$ 22,026,699	$ 1,805,005
Parcels	**subtotal**	**$ 79,151,020**	**78.9%**	**$ 618,169,466**	**$ 50,656,653**
Grand total		$100,266,480	100.0%	$ 783,081,209	$ 64,170,547

[1] Estimated current market value computed using the state multiplier of 7.81.

[3] Estimated tax receipts computed as follows: (2007 Assessment)* 4 * average millage rate of .160.

Refuge – Related Impacts

The establishment and operation of a refuge will contribute to the local economy in terms of construction and maintenance expenditures and employment. In addition, the refuge will draw visitors that will spend locally on food, services, and lodging. However, it is not currently feasible to provide a reliable estimate of these economic impacts due to many uncertainties regarding the establishment, size, and operation of the refuge. The following section provides some ancillary information regarding how the establishment of a refuge may impact the local economy.

Visitor-Related Impacts

Absent more detailed information regarding anticipated refuge budget for land acquisition and anticipated management, it is difficult to make any credible estimates regarding refuge visitation. It is anticipated that, should the refuge be established, visitors would be welcomed to enjoy traditional refuge-related activities such as hunting, fishing, and wildlife viewing. Hunting and fishing on refuge property would still require a state license.

Pennsylvania has always had a large segment of its population engaged in traditional outdoor activities. Many of these participants visit State Game Lands located in the northern part of Monroe County. The 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation revealed that 4.6 million Pennsylvania residents and nonresidents 16 years old and older fished, hunted, or watched wildlife in Pennsylvania.[11] Of the total number of participants, 1.3 million fished, 1 million hunted, and 3.8 million participated in wildlife-watching activities, including observing, feeding, and photographing wildlife.[12] In total, 1.8 million state residents and nonresidents fished or hunted in Pennsylvania. This group comprised 1.3 million anglers (71 percent of all participants) and one million hunters (56 percent of all participants). Among the 1.8 million people who fished or hunted in the state, 784 thousand (44 percent) fished but did not hunt in Pennsylvania. Another 517 thousand (29 percent) hunted but did not fish. The remaining 482 thousand (27 percent) fished and hunted in Pennsylvania in 2001.

In 2001, state residents and nonresidents spent $3 billion on wildlife recreation in Pennsylvania. Of that total, trip-related expenditures were $644 million and equipment purchases totaled $1.9 billion. The remaining $462 million was spent on licenses, contributions, land ownership and leasing, and other items and services.

[11] 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation - Pennsylvania, US Fish and Wildlife Service, February 2003.

[12] The sum of anglers, hunters, and wildlife watchers exceeds the total number of participants in wildlife-related recreation because many individuals engaged in more than one wildlife activity.

The 2001 survey reported that the average expenditure in Pennsylvania, per participant, was $582 for hunting, $321 for fishing, and $230 for wildlife watching. Table 21 shows the breakdown for each of these figures.

Table 21. Pennsylvania Outdoor Recreation Expenditures for 2001.

	Avg. Expenditures per Participant	Percent of Total
Hunting	**$ 582**	100%
Food and Lodging	$ 104	18%
Transportation	$ 73	13%
Other trip costs	$ 13	2%
Equipment	$ 392	67%
Fishing (freshwater, except Great Lakes)	**$ 321**	100%
Food and Lodging	$ 96	30%
Transportation	$ 64	20%
Other trip costs	$ 70	22%
Equipment	$ 92	29%
Wildlife Watching	**$ 230**	100%
Food and Lodging	$ 80	35%
Transportation	$ 47	20%
Other trip costs	$ 8	3%
Equipment	$ 95	41%

Source: 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation - Pennsylvania, US Fish and Wildlife Service, February 2003

Participation in Monroe County

Limited data exist to describe outdoor recreational activity in Monroe County. The Pennsylvania Game Commission does track hunting license sales in the county (Table 22). In 2006, over 7,000 resident adult hunting licenses were sold in the county. The Pennsylvania Fish and Boat Commission reports over 13,000 resident fishing licenses were sold in the county in 2006. These figures support the sense that Monroe County residents are active participants in traditional outdoor sports.

Table 22. Resident Hunting and Fishing License Sales for Monroe County, Pennsylvania in 2006.

Hunting	**Sales**	**% of pop.**
Adult	7,011	4.2%
Archery	2,356	1.4%
Fur	1,653	1.0%
Bear	2,001	1.2%
Antlerless	9,965	6.0%
Fishing	13,303	8.0%

Source: Pennsylvania Game Commission, Pennsylvania Fish and Boat Commission

Appendix E

FINAL
Land Protection Plan

Table of Contents

Introduction and Purpose

This final Land Protection Plan (LPP) identifies the land protection boundary for the proposed Cherry Valley National Wildlife Refuge (refuge). Working with numerous partners, the Fish and Wildlife Service delineated 20,466 acres of biologically significant land in the Cherry Valley study area. These acres are encompassed by the recommend acquisition boundary establish in Alternative B of the Final Cherry Valley National Wildlife Refuge Feasibility Study and Environmental Assessment (Final EA). We plan to protect land throughout this focus area through both fee acquisition and conservation easements. Of the total acreage, we recommend acquiring 10,233 acres (50 percent) in fee title and 10,233 acres (50 percent) in conservation easements. 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 proposed acquisition 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 refuge boundary. The maps (Attachment E.1) show the study area boundary and the land parcels in the preferred action area (i.e., as defined in Alternative B of the Final EA). A corresponding table identifies each parcel, its tax map number, acreage, and our priority and recommended option for acquiring and protecting its habitat.

Project Description

Service Preferred Action-Refuge Land Protection Boundary

The proposed Cherry Valley National Wildlife Refuge lies approximately 60 miles northwest of New York City, and 60 miles north of Philadelphia, Pennsylvania, in the southeastern section of Monroe County, Pennsylvania. and in northeastern Northampton County, Pennsylvania. The proposed refuge would protect a combination of wetland and upland habitat supporting migratory birds, federal- and state-listed threatened and endangered species, and regionally significant wildlife and plant communities in the Cherry Valley watershed. A rolling valley located along the Kittatinny Ridge, Cherry Valley contains riparian (stream side) habitats, ponds, emergent marshes, fens, scrub-shrub wetlands, wooded swamps, mixed hardwood upland forests, grasslands and farmlands.

Migratory bird and threatened and endangered species' habitat are among the primary reasons for creating the refuge and guiding its management.

- Cherry Valley lies within the Atlantic Flyway in northeastern Pennsylvania. Numerous migratory colonial water birds, songbirds, raptors, freshwater wetland birds, and waterfowl follow the Kittatinny Ridge as a travel corridor and take refuge, forage, and nest in the forest, scrub-shrub, grassland, and wetland habitats that are found there.

- Cherry Valley provides habitat for many protected plants and animals, including federally listed threatened and endangered species. Species of concern documented to be present in the valley include bog turtle[1], northeastern bulrush[2], and American eel[3]. A historical record for Indiana bat[2], in conjunction with appropriate summer foraging and roosting habit, and the proximity of bat hibernacula, are strong indicators that the species may still be represented in the valley. Dwarf wedgemussel[2], striped bass[3], and American shad[3], are documented to be present nearby in the Delaware River. Although it is uncertain if dwarf wedgemussel occurs in Cherry Creek, and striped bass and American shad likely do not, all three species are in the Delaware River basin and would benefit from clean, unpolluted water in the watershed. At a minimum, the Cherry Creek watershed provides a valuable ecological service in this regard.

To this end, the preferred action (Alternative B, the "Diverse Habitat Complex") for the proposed Cherry Valley National Wildlife Refuge establishes a land protection boundary of approximately 20,466 acres. This boundary was developed out of numerous meetings with conservation partners and came from a habitat review based on aerial photography and GIS maps, a familiarity with on-the-ground habitat features on the part of the members of the Cherry Valley Study Team, and a review of a compilation of tax maps from the municipalities of Chestnuthill, Delaware Water Gap, Hamilton, Ross, Smithfield, and Stroud in Monroe County, Pennsylvania.

Refuge Purposes

The following purposes have been developed for the establishment of the refuge:

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

[1] Federally-listed, Threatened
[2] Federally-listed, Endangered
[3] Interjurisdictional Fish

"to conserve (A) fish or wildlife which are listed as endangered species or threatened species…or (B) plants…" 16 U.S.C. §1534 (Endangered Species Act of 1973), and

"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), and

"for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..." 16 U.S.C. §742f(b)(1) (Fish and Wildlife Act of 1956), and

"for the development, advancement, management, conservation, and protection of fish and wildlife resources...." 16 U.S.C. §742f(a)(4), (Secretarial powers to implement laws related to fish and wildlife).

Status of Resources to be Protected

Wildlife and Habitat Resources

The proposed refuge lies along the Kittatinny Ridge in the Ridge and Valley physiographic province. The area contains fertile soils and has a long history of agricultural activity. Its grassland and related habitat features includes natural grasslands, croplands, pastures, old farm fields, hedgerows, and early successional wood lots. Old farm ponds, limestone fens, wet meadows, and swamps are found throughout the landscape. Although grasslands and open habitats are common throughout much of the valley, large parcels of forest also are scattered throughout and flank the valley along north and south facing ridge and mountain slopes. The upland forest and forested wetland habitats include stands of deciduous hardwood forest, scrubland and scrub-shrub wetland, vernal pools, and hardwood swamp.

Migratory colonial waterbirds, songbirds, raptors, freshwater wetland birds, and waterfowl funnel through the valley during spring and fall migrations and many forage and take refuge in its grassland, forest and wetland habitats. Forests, forested wetlands, and vernal pools also provide habitat important for a diverse group of reptiles and amphibians and other species. The forests and associated swamps and marshes of the valley likely provide summer foraging and roosting habitat for the federally-listed, endangered Indiana bat. Bog turtles are found in great numbers in the fens and wet meadows in the valley. Bog turtles live in spring-fed wetlands throughout the Cherry Valley and the existing riparian corridor along Cherry Creek and its tributaries provides good habitat connectivity for this species as well as other species of concern. Although some of the wetlands are in a sense protected due to conservation-focused easements and ownerships, many such wetlands remain unprotected. An additional challenge is that springs that provide water to these wetland systems have their genesis on the ridge

and mountain slopes that flank the Cherry Valley to the north and south. Unfortunately, only a small amount of these forested slopes is protected. This is of great concern because development or other alterations here would jeopardize the hydrologic link that supports the valley wetlands and the unique assemblage of species that inhabit them. This crucial connection makes the protection of associated water sources and forested slopes a critical component of land protection in the proposed Cherry Valley NWR.

Threats to the Resource

The loss, alteration, and fragmentation of habitat all pose the greatest threats to wildlife in the Cherry Valley. That loss of habitat results from development, which is occurring at a rapid rate in eastern Pennsylvania. As development continues to dominate the landscape in Monroe County to the north and Northampton County to the south, the relatively unfragmented habitat that remains in the Cherry Valley stands in stark contrast. 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 valley and maintaining their connectivity are crucial for the long-term viability of populations of area-sensitive wildlife. A discontinuity of emergent and forested wetlands, along with the loss of other suitable corridors, may lead eventually to genetic isolation and local extirpation of bog 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.

These threats, albeit present, are not yet particularly common in the Cherry Valley and there is still time to protect the area and its resources. Commuting from areas just north and south of Cherry Valley 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 housing is continuous, although surprisingly, many area developers have expressed their interest in the preservation of the valley. 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 may alter the fens and wet meadows inhabited by bog turtles. Development continues to fragment the large forest parcels inhabited by area-sensitive species of raptors and passerines.

White-tailed deer pose a significant threat to forest health and forest regeneration in Cherry Valley upland and wetland forests. Deer damage, coupled with human factors, has severely affected some of Pennsylvania'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 or limited. 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 and forest regeneration of native species.

Continuing Partnership Effort

The threats to the resource described above make preserving land in eastern Pennsylvania both crucial and challenging. As 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 Monroe County becomes more apparent. For that reason, we recognize the need to collaborate with other conservation organizations in the region. Therefore, we would work to combine our efforts with those of many partners, such as The Nature Conservancy, Friends of Cherry Valley, Ducks Unlimited, Trout Unlimited, Pennsylvania Audubon, Pennsylvania Game Commission, Pennsylvania Fish and Boat Commission, National Park Service, Pennsylvania Department of Conservation and Natural Resources, Natural Resource Conservation Service, Monroe County, Stroud Township, Hamilton Township, Smithfield Township, Ross Township, Pocono Heritage Land Trust, Pocono Wildlife Rehabilitation Center, Brodhead Watershed Association, as well as numerous other partners yet to be identified. Many of our partners already own or have future plans to protect lands in the valley through conservation or agricultural easements. Still others have completed on-the-ground habitat restoration projects throughout Cherry Valley and along Cherry Creek. These partners use their individual mission statements to focus protection and restoration efforts. T aken 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.

Action and Objectives

Land Protection Area

The land protection area has a boundary of up to 20,466 acres within the 31,500 acre study area (see Figure 3-4 and Table 3-3 in the Final EA). The area contains portions of 13 of the valley and ridge's defined ecosystems. The Service concludes that acquiring identified habitat areas through Alternative B over time will also provide for the protection of rare and unique habitats envisioned by the Study Act; however, Alternative B would also help many of the more common game and non-game species that continue to rely on the availability of ample and quality habitat. This habitat complex would provide ample opportunities for wildlife-dependent recreation, new and dynamic partnerships, and scientific research.

Land Cover/Land Use

Table E-1 summarizes the general types of land use in the land protection area. In general, the land is a mix of forested and non-forested wetlands, forested uplands,

fallow fields, pasturelands, and some early successional habitats. Most of those lands could benefit from large-scale management.

Table E-2 summarizes the habitats present in the land protection area defined in the Cherry Valley National Wildlife Refuge Final Feasibility Study and Environmental Assessment (Final EA). In general, the land is a mix of forested and non-forested wetlands, forested uplands, fallow fields, agricultural land, and some early successional habitats. Most of those lands could benefit from large-scale management.

Table E-1. Land use within the land protection area (i.e., lands identified under Alternative B) for the Cherry Valley National Wildlife Refuge Final Feasibility Study and Environmental Assessment, Monroe County, Pennsylvania.

Use	Acreage
Agriculture	5,064.70
Communication/Transportation/Utilities	3,326.16
Cultural, Public/Private Parks & Recreation	857.65
Forest	4,351.85
Hotels	155.83
Industrial	628.91
Not Elsewhere Classified	19.07
Other	32.82
Residential	3,319.15
Resorts & Group Camps	95.75
Retail Trade	63.73
Services & F.I.R.E.	160.70
Vacant	2,389.20
Total	20,465.52

Table E-2. Habitat Types within the land protection area (i.e., lands identified under Alternative B) for the Cherry Valley National Wildlife Refuge Final Feasibility Study and Environmental Assessment, Monroe County, Pennsylvania.

		Acres			
		Potential Refuge Lands			
	Ecological Systems	**No Current Protection**	**Current Protection***	**Totals**	**Totals***
Upland Forest Habitats	Appalachian (Hemlock)-Northern Hardwood Forest	930.06	72.70	**1,002.76**	**1,140.84**
	Central Appalachian Dry Oak-Pine Forest	7,365.41	181.73	**7,547.14**	**10,182.69**
	Central Appalachian Dry Oak-Pine Rocky Woodland	17.88	0.00	**17.88**	**73.55**
	Northeastern Interior Dry-Mesic Oak Forest	4,093.26	260.88	**4,354.14**	**5,369.94**
Wetlands & Riparian Habitats	Central Appalachian Floodplain	4.29	0.00	**4.29**	**98.3**
	Central Appalachian Stream and Riparian	261.97	73.02	**334.99**	**340.38**
	Laurentian-Acadian Freshwater Marsh	2.25	0.17	**2.42**	**2.42**
	Laurentian-Acadian Wet Meadow-Shrub Swamp	332.90	163.16	**496.06**	**506.29**
	North-Central Appalachian Acidic Swamp	275.39	4.13	**279.52**	**309.9**
	North-Central Appalachian Seepage Fen	13.70	0.00	**13.70**	**13.7**
	North-Central Interior Wet Flatwoods	76.25	37.75	**114.00**	**114**
	North-Central Interior and Appalachian Acidic Peatland	3.80	0.00	**3.80**	**12.35**
	North-Central Interior and Appalachian Rich Swamp	163.28	24.10	**187.38**	**187.38**
	Total Ecological Systems	**13,540.44**	**817.64**	**14,358.08**	**18,351.74**
	Total Parcel Acres (31,585.8 total boundary acres)	**18,630.85**	**1,834.70**	**20,465.55**	**24,943.5**

*Current Protection consists of agricultural easements and private conservation.

* Total consists of Potential Refuge Lands plus Municipal, State and Federal lands.

Maps and Ownership Table

Attachment E.1 provides maps and a table listing all land parcels within the acquisition boundary proposed under the Service's preferred action (Alternative B). We provide this information to inform landowners of our interest in lands in that area.

The table provides the following information:

- Parcel ID: The parcel number from the 2006 Monroe County Planning Commission.

- Municipality: The municipality where the parcel is located.
- Deed Acres*: The acreage listed on the parcels deed.
- Map ID: The map in attachment G.1 that shows the parcel.

*****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 preferred action 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 protection. However, as landowners offer us parcels, and as funds become available, we will base the priority for land protection on several factors. Priority is assigned as follows:

Priority 1: Priority 1 parcels contain most of the lands and habitats that meet the threshold for federal protection. They are:

- parcels that contain a significant amount of functioning undisturbed or relatively undisturbed wetlands of significant importance that support federal trust species (e.g., federally-listed species, migratory birds);
- parcels that contain potentially significant habitat for federally-listed species found within the refuge acquisition boundary;
- parcels that are of significant importance to the Cherry Valley watershed;
- parcels that border the Cherry Creek;
- parcels that contain known bog turtle habitat or prime bog turtle habitat or hydrologically connected upland areas;
- parcels that contain known bog turtle habitat in need of immediate restoration;
- parcels that have a significant value for migratory birds, with prime nesting and foraging habitats for federal- or state-listed species; and/or
- parcels that help to restore or maintain habitat connectivity.

Priority 2: Priority 2 parcels are located throughout the preferred action area, but tend to cluster around priority 1 lands or along the smaller tributaries of the Cherry Creek, and contain:

- wetlands associated with or hydrologically connected to priority 1 wetlands;
- areas of high potential for habitat restoration or enhancement
- 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.

Priority 3: Most priority 3 parcels are on uplands throughout the proposed refuge 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 federally- and state-listed species habitats.

Our intention is to minimize the need to acquire residences and buildings on these lands, while protecting and restoring habitat, so parcels of this nature will be evaluated on a case-by-case basis. 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 land protection, including the availability of willing sellers and the availability of funding. In addition, the Service must be flexible in its methods and priorities of land protection 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 land protection 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 local landowners.

Option 1. Management or Land Protection by Others

A great deal of land in, adjacent to, and ecologically important to the Cherry Valley is already owned by our partners or managed by our partners through conservation easements. It should also be emphasized that the protection of the Cherry Valley fits well into a large landscape scale wildlife and habitat corridor that is being pieced together in the area. Cherry Valley would serve as an important keystone in this conservation effort. The following partners both manage and own property in or that are ecologically associated with the Cherry Valley:

- National Park Service : Delaware Water Gap National Recreation Area
  Middle Delaware National Scenic River
  Appalachian National Scenic Trail
- Pennsylvania : Pennsylvania Game Lands 168, 186
- New Jersey: Worthington State Forest
- Hawk Mountain Sanctuary
- The Nature Conservancy
- Pocono Heritage Land Trust
- Monroe County
- Stroud Township

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. The Land Protection Methods section (see page E-12) 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 is not assured under other ownerships, active land management is required, or we determined the current landowner would be unwilling to sell a partial interest like a conservation easement.

In some cases, it may become necessary to convert a previously acquired 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.

Land Protection Methods

We may use three methods of acquiring either a full or a partial interest in the parcels identified for Service land protection: (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 land protection 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 Protection Policy

Once a refuge land protection 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 land protection 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 proposed Cherry Valley refuge, we solicited and carefully considered public comments on Service land protection. We worked with other federal partners, the state of Pennsylvania, county government, five municipalities, local land trusts, local and national conservation organizations who are directly involved in land protection strategies, and local higher education institutions. The proximity of the Delaware Water Gap National Recreation Area led to additional coordination and assistance from the National Park Service.

The Draft Land Protection Plan (Draft LPP) was made available, as part of the Cherry Valley NWR Draft Feasibility Study and Environmental Assessment (Draft EA), to all affected landowners, our conservation partners, Commonwealth of Pennsylvania, county offices and local agencies and town offices via the Service's Cherry Valley website, by answering written or verbal requests for the document, and at two public meetings held in Cherry Valley in November 2008. The Draft EA and Draft LPP were open for public comment between October 31 and December 5, 2008. Comments and questions were also accepted at two public meetings during the development of the study and two addition public meetings following completion of the draft study.

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 local community. 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.

Voters in Monroe County have consistently supported additional land protection. During our public involvement for the study, local residents and town officials were enthusiastic about Service land protection. Many people encouraged us to develop a larger proposal. Land protection 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 in the valley tends to be negative and this is an increasing trend.

One concern we heard expressed about Service land protection 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. Other uses may also be permitted provided they are appropriate and compatible with the purposes of the refuge and the mission of the Refuge System.

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 Cherry Valley is likely to hold many cultural sites of a nature similar to those found in the adjoining Delaware Valley. Our interpretation and environmental education programs will continue to promote public understanding and appreciation of the area's rich cultural resources.

Attachment E.1. Parcel Maps and Table

The following maps and table show the approved land protection boundary and land parcels in that area in which the Service may have an interest. We will acquire either full or partial interest in land parcels by fee purchase, as available from willing sellers over time and as the availability of funding allows. We also plan to develop cooperative management agreements on other public lands in the project area.

Table E.2. Proposed Cherry Valley NWR Land Protection Parcel List.

Parcel ID:	The parcel number from the 2006 Monroe County Planning Commission parcel dataset.
Municipality:	The municipality where the parcel is located.
Deed Acres:	The acreage listed on the parcel deed.
Acquisition Priority*:	This value is assigned to each parcel based on the prioritization approach identified above in this Land Protection Plan. The reader will note that specific priority scores for each parcel have not been assigned here. There are two important reasons for this: The first is that we have not yet completed a parcel specific habitat assessment and resource inventory for the entire list of parcels; the second is that an arbitrary assignment of values based on limited information may lead to misinterpretations on the part of property owners which could detract from the land protection direction of the entire project. A thorough evaluation of each parcel is currently being conducted and, once completed, will be appended to this Land Protection Plan. Once prioritization determinations are made, however, they can be revisited if additional information becomes available that would change the prioritization score.
Protection Method**:	Similar to the land acquisition priority, this determination is based on a number of factors including resource value of the parcel in question and parcel-specific negotiations between the Service and the landowner. Although a

general approach to this determination has been outlined previously in this document, the reader will note that the specific protection method for each parcel has not been assigned here. There are two important reasons for this approach: The first is that we have not yet completed a parcel specific habitat assessment and resource inventory for the entire list of parcels, and that there have been no specific discussion with landowners regarding their interest in participating in the project; the second is that an arbitrary assignment of a protection method based on limited information may lead to misinterpretations on the part of property owners which could detract from the land protection direction of the entire project. A thorough evaluation of each parcel is currently being conducted and, once completed, will be appended to this Land Protection Plan. Once the parcel specific protection method is identified, the determination can be revisited if additional information becomes available that would change the identified protection method

Map ID: The map in Attachment E.1 that shows the parcel. For example, a Map ID of A-1 signifies that the parcel can be located on Map A, and is labeled with the number “1” on that map sheet.

Table E.1-1. Proposed Cherry Valley NWR Land Protection Parcel List.

Parcel ID	Municipality	Deed Acres	Acquisition Priority*	Protection Method**	Ownership	Map ID
02625800163659	Chestnuthill	6.01	1, 2, or 3	Fee Title or Easement	Private	A-1
02625800270065	Chestnuthill	42.65	1, 2, or 3	Fee Title or Easement	Private	A-10
02625800275650	Chestnuthill	1.51	1, 2, or 3	Fee Title or Easement	Private	A-11
02625800282098	Chestnuthill	7.80	1, 2, or 3	Fee Title or Easement	Private	A-12
02625800375989	Chestnuthill	54.00	1, 2, or 3	Fee Title or Easement	Private	A-13
02625800381862	Chestnuthill	2.10	1, 2, or 3	Fee Title or Easement	Private	A-14
02625800384645	Chestnuthill	0.20	1, 2, or 3	Fee Title or Easement	Private	A-15
02625800385189	Chestnuthill	3.20	1, 2, or 3	Fee Title or Easement	Private	A-16
02625800390368	Chestnuthill	7.84	1, 2, or 3	Fee Title or Easement	Private	A-17
02625800391024	Chestnuthill	5.53	1, 2, or 3	Fee Title or Easement	Private	A-18
02625800454667	Chestnuthill	1.74	1, 2, or 3	Fee Title or Easement	Private	A-19
02625800172147	Chestnuthill	1.33	1, 2, or 3	Fee Title or Easement	Private	A-2
02625800461105	Chestnuthill	19.10	1, 2, or 3	Fee Title or Easement	Private	A-20
02625800465006	Chestnuthill	1.32	1, 2, or 3	Fee Title or Easement	Private	A-21
02625800467071	Chestnuthill	5.15	1, 2, or 3	Fee Title or Easement	Private	A-22
02625800467349	Chestnuthill	2.00	1, 2, or 3	Fee Title or Easement	Private	A-23
02625800492090	Chestnuthill	13.12	1, 2, or 3	Fee Title or Easement	Private	A-24
02625800497293	Chestnuthill	0.00	1, 2, or 3	Fee Title or Easement	Private	A-25
02625800574626	Chestnuthill	89.90	1, 2, or 3	Fee Title or Easement	Private	A-26
02625800589611	Chestnuthill	26.28	1, 2, or 3	Fee Title or Easement	Private	A-27
02625800591756	Chestnuthill	1.92	1, 2, or 3	Fee Title or Easement	Private	A-28
02625800666726	Chestnuthill	24.05	1, 2, or 3	Fee Title or Easement	Private	A-29
02625800173335	Chestnuthill	1.35	1, 2, or 3	Fee Title or Easement	Private	A-3

02625800688247	Chestnuthill	87.56	1, 2, or 3	Fee Title or Easement	Private	A-30
02625800748873	Chestnuthill	4.24	1, 2, or 3	Fee Title or Easement	Private	A-31
02625800767218	Chestnuthill	2.30	1, 2, or 3	Fee Title or Easement	Private	A-32
02625800770535	Chestnuthill	22.96	1, 2, or 3	Fee Title or Easement	Private	A-33
02625800772384	Chestnuthill	2.33	1, 2, or 3	Fee Title or Easement	Private	A-34
02625800775330	Chestnuthill	2.35	1, 2, or 3	Fee Title or Easement	Private	A-35
02625800786974	Chestnuthill	11.04	1, 2, or 3	Fee Title or Easement	Private	A-36
02625800853815	Chestnuthill	97.50	1, 2, or 3	Fee Title or Easement	Private	A-37
02625800857221	Chestnuthill	11.50	1, 2, or 3	Fee Title or Easement	Private	A-38
02625800860133	Chestnuthill	0.30	1, 2, or 3	Fee Title or Easement	Private	A-39
02625800174449	Chestnuthill	1.36	1, 2, or 3	Fee Title or Easement	Private	A-4
02625800862990	Chestnuthill	40.66	1, 2, or 3	Fee Title or Easement	Private	A-40
02625800877622	Chestnuthill	8.39	1, 2, or 3	Fee Title or Easement	Private	A-41
02625800889925	Chestnuthill	1.87	1, 2, or 3	Fee Title or Easement	Private	A-42
02625800889970	Chestnuthill	1.46	1, 2, or 3	Fee Title or Easement	Private	A-43
02625800969837	Chestnuthill	2.19	1, 2, or 3	Fee Title or Easement	Private	A-44
02625800977017	Chestnuthill	3.00	1, 2, or 3	Fee Title or Easement	Private	A-45
02625800981285	Chestnuthill	1.05	1, 2, or 3	Fee Title or Easement	Private	A-46
02625800981440	Chestnuthill	1.10	1, 2, or 3	Fee Title or Easement	Private	A-47
02625800981503	Chestnuthill	1.24	1, 2, or 3	Fee Title or Easement	Private	A-48
02625800990425	Chestnuthill	2.75	1, 2, or 3	Fee Title or Easement	Private	A-49
02625800175658	Chestnuthill	1.23	1, 2, or 3	Fee Title or Easement	Private	A-5
02625800991679	Chestnuthill	2.34	1, 2, or 3	Fee Title or Easement	Private	A-50
02625800993171	Chestnuthill	10.47	1, 2, or 3	Fee Title or Easement	Private	A-51
02625800993754	Chestnuthill	1.70	1, 2, or 3	Fee Title or Easement	Private	A-52

02625801156985	Chestnuthill	8.80	1, 2, or 3	Fee Title or Easement	Private	A-53
02625801255639	Chestnuthill	5.90	1, 2, or 3	Fee Title or Easement	Private	A-54
02625801257838	Chestnuthill	4.96	1, 2, or 3	Fee Title or Easement	Private	A-55
02625801350811	Chestnuthill	4.54	1, 2, or 3	Fee Title or Easement	Private	A-56
02625801352853	Chestnuthill	2.09	1, 2, or 3	Fee Title or Easement	Private	A-57
02625801356609	Chestnuthill	5.19	1, 2, or 3	Fee Title or Easement	Private	A-58
02625801364302	Chestnuthill	9.95	1, 2, or 3	Fee Title or Easement	Private	A-59
02625800176984	Chestnuthill	1.20	1, 2, or 3	Fee Title or Easement	Private	A-6
02625900203445	Chestnuthill	36.60	1, 2, or 3	Fee Title or Easement	Private	A-60
02626800062919	Chestnuthill	0.28	1, 2, or 3	Fee Title or Easement	Private	A-61
02626800068003	Chestnuthill	28.64	1, 2, or 3	Fee Title or Easement	Private	A-62
02626800071465	Chestnuthill	14.65	1, 2, or 3	Fee Title or Easement	Private	A-63
02626800074808	Chestnuthill	2.21	1, 2, or 3	Fee Title or Easement	Private	A-64
02626800076068	Chestnuthill	3.70	1, 2, or 3	Fee Title or Easement	Private	A-65
02626800077865	Chestnuthill	1.26	1, 2, or 3	Fee Title or Easement	Private	A-66
02626800079556	Chestnuthill	4.35	1, 2, or 3	Fee Title or Easement	Private	A-67
02626800083914	Chestnuthill	90.99	1, 2, or 3	Fee Title or Easement	Private	A-68
02626800170184	Chestnuthill	7.33	1, 2, or 3	Fee Title or Easement	Private	A-69
02625800177882	Chestnuthill	1.26	1, 2, or 3	Fee Title or Easement	Private	A-7
02626800174441	Chestnuthill	5.39	1, 2, or 3	Fee Title or Easement	Private	A-70
02626800181532	Chestnuthill	2.24	1, 2, or 3	Fee Title or Easement	Private	A-71
02626800182034	Chestnuthill	9.99	1, 2, or 3	Fee Title or Easement	Private	A-72
02626800186974	Chestnuthill	3.31	1, 2, or 3	Fee Title or Easement	Private	A-73
02626800188793	Chestnuthill	5.51	1, 2, or 3	Fee Title or Easement	Private	A-74
02626800287147	Chestnuthill	70.04	1, 2, or 3	Fee Title or Easement	Private	A-75

02626800290664	Chestnuthill	40.00	1, 2, or 3	Fee Title or Easement	Private	A-76
02626800520533	Chestnuthill	10.63	1, 2, or 3	Fee Title or Easement	Private	A-77
02626800632604	Chestnuthill	3.24	1, 2, or 3	Fee Title or Easement	Private	A-78
02626900008419	Chestnuthill	16.03	1, 2, or 3	Fee Title or Easement	Private	A-79
02625800196249	Chestnuthill	15.89	1, 2, or 3	Fee Title or Easement	Private	A-8
02626900106763	Chestnuthill	8.60	1, 2, or 3	Fee Title or Easement	Private	A-80
02626900108391	Chestnuthill	15.00	1, 2, or 3	Fee Title or Easement	Private	A-81
02625800268637	Chestnuthill	3.95	1, 2, or 3	Fee Title or Easement	Private	A-9
04722900397801	Delaware Water Gap	0.92	1, 2, or 3	Fee Title or Easement	Private	E-1
04732000099225	Delaware Water Gap	0.23	1, 2, or 3	Fee Title or Easement	Private	E-10
04732000099343	Delaware Water Gap	0.79	1, 2, or 3	Fee Title or Easement	Private	E-11
04732000150698	Delaware Water Gap	26.20	1, 2, or 3	Fee Title or Easement	Private	E-12
04732000183886	Delaware Water Gap	0.70	1, 2, or 3	Fee Title or Easement	Private	E-13
04732001082633	Delaware Water Gap	0.56	1, 2, or 3	Fee Title or Easement	Private	E-14
04732001084719	Delaware Water Gap	4.31	1, 2, or 3	Fee Title or Easement	Private	E-15
04732001094357	Delaware Water Gap	6.67	1, 2, or 3	Fee Title or Easement	Private	E-16
04731002986999	Delaware Water Gap	1.00	1, 2, or 3	Fee Title or Easement	Private	E-2
04731002994136	Delaware Water Gap	1.76	1, 2, or 3	Fee Title or Easement	Private	E-3
04731007697198	Delaware Water Gap	1.51	1, 2, or 3	Fee Title or Easement	Private	E-4
04731008788367	Delaware Water Gap	56.80	1, 2, or 3	Fee Title or Easement	Private	E-5
04731008888921	Delaware Water Gap	0.36	1, 2, or 3	Fee Title or Easement	Private	E-6
04731012852921	Delaware Water Gap	1.09	1, 2, or 3	Fee Title or Easement	Private	E-7
04731012855395	Delaware Water Gap	2.53	1, 2, or 3	Fee Title or Easement	Private	E-8
04731012856929	Delaware Water Gap	10.31	1, 2, or 3	Fee Title or Easement	Private	E-9
07626700993431	Hamilton	42.55	1, 2, or 3	Fee Title or Easement	Private	C1-1

07626800638721	Hamilton	2.05	1, 2, or 3	Fee Title or Easement	Private	C1-10
07627700893656	Hamilton	0.86	1, 2, or 3	Fee Title or Easement	Private	C1-100
07627700896632	Hamilton	3.91	1, 2, or 3	Fee Title or Easement	Private	C1-101
07627700898327	Hamilton	2.16	1, 2, or 3	Fee Title or Easement	Private	C1-102
07627705070988	Hamilton	13.50	1, 2, or 3	Fee Title or Easement	Private	C1-103
07627705281424	Hamilton	2.90	1, 2, or 3	Fee Title or Easement	Private	C1-104
07627706388458	Hamilton	1.00	1, 2, or 3	Fee Title or Easement	Private	C1-105
07627706388940	Hamilton	1.41	1, 2, or 3	Fee Title or Easement	Private	C1-106
07627706483964	Hamilton	1.17	1, 2, or 3	Fee Title or Easement	Private	C1-107
07627706490078	Hamilton	1.24	1, 2, or 3	Fee Title or Easement	Private	C1-108
07627706494094	Hamilton	1.02	1, 2, or 3	Fee Title or Easement	Private	C1-109
07626800639773	Hamilton	2.26	1, 2, or 3	Fee Title or Easement	Private	C1-11
07627706495242	Hamilton	1.06	1, 2, or 3	Fee Title or Easement	Private	C1-110
07627800012815	Hamilton	24.91	1, 2, or 3	Fee Title or Easement	Private	C1-111
07627800032392	Hamilton	2.07	1, 2, or 3	Fee Title or Easement	Private	C1-112
07627800037577	Hamilton	52.00	1, 2, or 3	Fee Title or Easement	Private	C1-113
07627800056325	Hamilton	39.49	1, 2, or 3	Fee Title or Easement	Private	C1-114
07627800062231	Hamilton	8.66	1, 2, or 3	Fee Title or Easement	Private	C1-115
07627800068200	Hamilton	23.67	1, 2, or 3	Fee Title or Easement	Private	C1-116
07627800076044	Hamilton	16.78	1, 2, or 3	Fee Title or Easement	Private	C1-117
07627800080166	Hamilton	1.27	1, 2, or 3	Fee Title or Easement	Private	C1-118
07627800083746	Hamilton	41.98	1, 2, or 3	Fee Title or Easement	Private	C1-119
07626800658525	Hamilton	4.45	1, 2, or 3	Fee Title or Easement	Private	C1-12
07627800098750	Hamilton	18.30	1, 2, or 3	Fee Title or Easement	Private	C1-120
07627800101320	Hamilton	15.60	1, 2, or 3	Fee Title or Easement	Private	C1-121

07627800111074	Hamilton	25.95	1, 2, or 3	Fee Title or Easement	Private	C1-122
07627800116427	Hamilton	18.94	1, 2, or 3	Fee Title or Easement	Private	C1-123
07627800124192	Hamilton	10.10	1, 2, or 3	Fee Title or Easement	Private	C1-124
07627800126601	Hamilton	0.25	1, 2, or 3	Fee Title or Easement	Private	C1-125
07627800133175	Hamilton	1.24	1, 2, or 3	Fee Title or Easement	Private	C1-126
07627800141533	Hamilton	34.22	1, 2, or 3	Fee Title or Easement	Private	C1-127
07627800149784	Hamilton	13.88	1, 2, or 3	Fee Title or Easement	Private	C1-128
07627800169680	Hamilton	1.45	1, 2, or 3	Fee Title or Easement	Private	C1-129
07626800660383	Hamilton	9.60	1, 2, or 3	Fee Title or Easement	Private	C1-13
07627800196049	Hamilton	30.48	1, 2, or 3	Fee Title or Easement	Private	C1-130
07627800212906	Hamilton	15.40	1, 2, or 3	Fee Title or Easement	Private	C1-131
07627800216222	Hamilton	6.00	1, 2, or 3	Fee Title or Easement	Private	C1-132
07627800218851	Hamilton	9.72	1, 2, or 3	Fee Title or Easement	Private	C1-133
07627800225952	Hamilton	6.59	1, 2, or 3	Fee Title or Easement	Private	C1-134
07627800227335	Hamilton	3.08	1, 2, or 3	Fee Title or Easement	Private	C1-135
07627800230426	Hamilton	12.43	1, 2, or 3	Fee Title or Easement	Private	C1-136
07627800243498	Hamilton	3.27	1, 2, or 3	Fee Title or Easement	Private	C1-137
07627800245783	Hamilton	2.97	1, 2, or 3	Fee Title or Easement	Private	C1-138
07627800248364	Hamilton	3.86	1, 2, or 3	Fee Title or Easement	Private	C1-139
07626800665325	Hamilton	11.00	1, 2, or 3	Fee Title or Easement	Private	C1-14
07627800249990	Hamilton	6.05	1, 2, or 3	Fee Title or Easement	Private	C1-140
07627800250798	Hamilton	35.79	1, 2, or 3	Fee Title or Easement	Private	C1-141
07627800266907	Hamilton	12.41	1, 2, or 3	Fee Title or Easement	Private	C1-142
07627800278910	Hamilton	24.80	1, 2, or 3	Fee Title or Easement	Private	C1-143
07627800289738	Hamilton	9.03	1, 2, or 3	Fee Title or Easement	Private	C1-144

07627800300752	Hamilton	37.09	1, 2, or 3	Fee Title or Easement	Private	C1-145
07627800306865	Hamilton	10.00	1, 2, or 3	Fee Title or Easement	Private	C1-146
07627800316577	Hamilton	9.25	1, 2, or 3	Fee Title or Easement	Private	C1-147
07627800320815	Hamilton	6.13	1, 2, or 3	Fee Title or Easement	Private	C1-148
07627800321225	Hamilton	4.54	1, 2, or 3	Fee Title or Easement	Private	C1-149
07626800686112	Hamilton	91.17	1, 2, or 3	Fee Title or Easement	Private	C1-15
07627800341588	Hamilton	4.02	1, 2, or 3	Fee Title or Easement	Private	C1-150
07627800363711	Hamilton	10.26	1, 2, or 3	Fee Title or Easement	Private	C1-151
07627800370321	Hamilton	4.82	1, 2, or 3	Fee Title or Easement	Private	C1-152
07627800377334	Hamilton	10.28	1, 2, or 3	Fee Title or Easement	Private	C1-153
07627800378855	Hamilton	4.40	1, 2, or 3	Fee Title or Easement	Private	C1-154
07627800399165	Hamilton	44.66	1, 2, or 3	Fee Title or Easement	Private	C1-155
07627800404634	Hamilton	0.23	1, 2, or 3	Fee Title or Easement	Private	C1-156
07627800407184	Hamilton	85.13	1, 2, or 3	Fee Title or Easement	Private	C1-157
07627800462210	Hamilton	19.16	1, 2, or 3	Fee Title or Easement	Private	C1-158
07627800462839	Hamilton	12.10	1, 2, or 3	Fee Title or Easement	Private	C1-159
07626800717945	Hamilton	3.06	1, 2, or 3	Fee Title or Easement	Private	C1-16
07627800465520	Hamilton	0.50	1, 2, or 3	Fee Title or Easement	Private	C1-160
07627800469399	Hamilton	1.00	1, 2, or 3	Fee Title or Easement	Private	C1-161
07627800469992	Hamilton	7.13	1, 2, or 3	Fee Title or Easement	Private	C1-162
07627800478031	Hamilton	1.10	1, 2, or 3	Fee Title or Easement	Private	C1-163
07627800484188	Hamilton	34.00	1, 2, or 3	Fee Title or Easement	Private	C1-164
07627800515549	Hamilton	36.80	1, 2, or 3	Fee Title or Easement	Private	C1-165
07627800536636	Hamilton	5.05	1, 2, or 3	Fee Title or Easement	Private	C1-166
07627800539005	Hamilton	19.06	1, 2, or 3	Fee Title or Easement	Private	C1-167

07627800542012	Hamilton	4.89	1, 2, or 3	Fee Title or Easement	Private	C1-168
07627800552104	Hamilton	63.34	1, 2, or 3	Fee Title or Easement	Private	C1-169
07626800722428	Hamilton	12.47	1, 2, or 3	Fee Title or Easement	Private	C1-17
07627800563246	Hamilton	3.33	1, 2, or 3	Fee Title or Easement	Private	C1-170
07627800566840	Hamilton	18.43	1, 2, or 3	Fee Title or Easement	Private	C1-171
07627800600200	Hamilton	7.14	1, 2, or 3	Fee Title or Easement	Private	C1-172
07627800601530	Hamilton	0.61	1, 2, or 3	Fee Title or Easement	Private	C1-173
07627800605930	Hamilton	19.47	1, 2, or 3	Fee Title or Easement	Private	C1-174
07627800624213	Hamilton	49.67	1, 2, or 3	Fee Title or Easement	Private	C1-175
07627800636724	Hamilton	38.09	1, 2, or 3	Fee Title or Easement	Private	C1-176
07627800643934	Hamilton	12.63	1, 2, or 3	Fee Title or Easement	Private	C1-177
07627800655742	Hamilton	4.89	1, 2, or 3	Fee Title or Easement	Private	C1-178
07627800657085	Hamilton	4.57	1, 2, or 3	Fee Title or Easement	Private	C1-179
07626800728509	Hamilton	10.43	1, 2, or 3	Fee Title or Easement	Private	C1-18
07627800706376	Hamilton	12.98	1, 2, or 3	Fee Title or Easement	Private	C1-180
07627800715281	Hamilton	2.85	1, 2, or 3	Fee Title or Easement	Private	C1-181
07627800729013	Hamilton	36.04	1, 2, or 3	Fee Title or Easement	Private	C1-182
07627800739381	Hamilton	12.71	1, 2, or 3	Fee Title or Easement	Private	C1-183
07627800758725	Hamilton	1.26	1, 2, or 3	Fee Title or Easement	Private	C1-184
07627800759298	Hamilton	12.48	1, 2, or 3	Fee Title or Easement	Private	C1-185
07627800765284	Hamilton	37.14	1, 2, or 3	Fee Title or Easement	Private	C1-186
07627800802254	Hamilton	5.90	1, 2, or 3	Fee Title or Easement	Private	C1-187
07627800802684	Hamilton	6.80	1, 2, or 3	Fee Title or Easement	Private	C1-188
07627800808373	Hamilton	4.40	1, 2, or 3	Fee Title or Easement	Private	C1-189
07626800731049	Hamilton	10.08	1, 2, or 3	Fee Title or Easement	Private	C1-19

07627800814278	Hamilton	1.17	1, 2, or 3	Fee Title or Easement	Private	C1-190
07627800814559	Hamilton	4.03	1, 2, or 3	Fee Title or Easement	Private	C1-191
07627800814931	Hamilton	2.60	1, 2, or 3	Fee Title or Easement	Private	C1-192
07627800815017	Hamilton	2.03	1, 2, or 3	Fee Title or Easement	Private	C1-193
07627800823766	Hamilton	5.87	1, 2, or 3	Fee Title or Easement	Private	C1-194
07627800856405	Hamilton	3.79	1, 2, or 3	Fee Title or Easement	Private	C1-195
07627800862839	Hamilton	16.06	1, 2, or 3	Fee Title or Easement	Private	C1-196
07627800878434	Hamilton	7.95	1, 2, or 3	Fee Title or Easement	Private	C1-197
07627800885550	Hamilton	33.98	1, 2, or 3	Fee Title or Easement	Private	C1-198
07627800930655	Hamilton	23.08	1, 2, or 3	Fee Title or Easement	Private	C1-199
07626708976960	Hamilton	20.62	1, 2, or 3	Fee Title or Easement	Private	C1-2
07626800732679	Hamilton	5.30	1, 2, or 3	Fee Title or Easement	Private	C1-20
07627800937839	Hamilton	12.03	1, 2, or 3	Fee Title or Easement	Private	C1-200
07627800960562	Hamilton	30.92	1, 2, or 3	Fee Title or Easement	Private	C1-201
07627800967241	Hamilton	3.62	1, 2, or 3	Fee Title or Easement	Private	C1-202
07627800971948	Hamilton	2.91	1, 2, or 3	Fee Title or Easement	Private	C1-203
07627800973813	Hamilton	1.67	1, 2, or 3	Fee Title or Easement	Private	C1-204
07627800975411	Hamilton	2.40	1, 2, or 3	Fee Title or Easement	Private	C1-205
07627800977145	Hamilton	7.00	1, 2, or 3	Fee Title or Easement	Private	C1-206
07627800979831	Hamilton	3.00	1, 2, or 3	Fee Title or Easement	Private	C1-207
07627800980274	Hamilton	5.92	1, 2, or 3	Fee Title or Easement	Private	C1-208
07627800984022	Hamilton	0.33	1, 2, or 3	Fee Title or Easement	Private	C1-209
07626800739381	Hamilton	7.87	1, 2, or 3	Fee Title or Easement	Private	C1-21
07627800988193	Hamilton	5.80	1, 2, or 3	Fee Title or Easement	Private	C1-210
07627801172968	Hamilton	2.40	1, 2, or 3	Fee Title or Easement	Private	C1-211

07627801174846	Hamilton	1.21	1, 2, or 3	Fee Title or Easement	Private	C1-212
07627801175872	Hamilton	1.29	1, 2, or 3	Fee Title or Easement	Private	C1-213
07627801176775	Hamilton	1.09	1, 2, or 3	Fee Title or Easement	Private	C1-214
07627801177732	Hamilton	0.60	1, 2, or 3	Fee Title or Easement	Private	C1-215
07627801179764	Hamilton	1.48	1, 2, or 3	Fee Title or Easement	Private	C1-216
07627801180403	Hamilton	4.86	1, 2, or 3	Fee Title or Easement	Private	C1-217
07627801185189	Hamilton	1.07	1, 2, or 3	Fee Title or Easement	Private	C1-218
07627801186165	Hamilton	0.50	1, 2, or 3	Fee Title or Easement	Private	C1-219
07626800743603	Hamilton	75.00	1, 2, or 3	Fee Title or Easement	Private	C1-22
07627801187175	Hamilton	1.25	1, 2, or 3	Fee Title or Easement	Private	C1-220
07627801189029	Hamilton	1.45	1, 2, or 3	Fee Title or Easement	Private	C1-221
07627801352820	Hamilton	11.48	1, 2, or 3	Fee Title or Easement	Private	C1-222
07627804808770	Hamilton	5.06	1, 2, or 3	Fee Title or Easement	Private	C1-223
07627900001925	Hamilton	17.00	1, 2, or 3	Fee Title or Easement	Private	C1-224
07627900006416	Hamilton	22.80	1, 2, or 3	Fee Title or Easement	Private	C1-225
07627900105314	Hamilton	16.90	1, 2, or 3	Fee Title or Easement	Private	C1-226
07627900115873	Hamilton	60.28	1, 2, or 3	Fee Title or Easement	Private	C1-227
07627900200435	Hamilton	5.90	1, 2, or 3	Fee Title or Easement	Private	C1-228
07627900205407	Hamilton	5.60	1, 2, or 3	Fee Title or Easement	Private	C1-229
07626800755971	Hamilton	2.55	1, 2, or 3	Fee Title or Easement	Private	C1-23
07627900311364	Hamilton	4.31	1, 2, or 3	Fee Title or Easement	Private	C1-230
07627903302142	Hamilton	0.56	1, 2, or 3	Fee Title or Easement	Private	C1-231
07628700083688	Hamilton	36.20	1, 2, or 3	Fee Title or Easement	Private	C1-232
07628700193345	Hamilton	1.00	1, 2, or 3	Fee Title or Easement	Private	C1-233
07628700291597	Hamilton	17.00	1, 2, or 3	Fee Title or Easement	Private	C1-234

07628800012915	Hamilton	3.99	1, 2, or 3	Fee Title or Easement	Private	C1-235
07628800016853	Hamilton	2.17	1, 2, or 3	Fee Title or Easement	Private	C1-236
07628800021961	Hamilton	76.72	1, 2, or 3	Fee Title or Easement	Private	C1-237
07628800027161	Hamilton	13.54	1, 2, or 3	Fee Title or Easement	Private	C1-238
07628800051335	Hamilton	38.35	1, 2, or 3	Fee Title or Easement	Private	C1-239
07626800767710	Hamilton	38.87	1, 2, or 3	Fee Title or Easement	Private	C1-24
07628800067668	Hamilton	3.74	1, 2, or 3	Fee Title or Easement	Private	C1-240
07628800083627	Hamilton	109.00	1, 2, or 3	Fee Title or Easement	Private	C1-241
07628800110853	Hamilton	2.65	1, 2, or 3	Fee Title or Easement	Private	C1-242
07628800123291	Hamilton	2.09	1, 2, or 3	Fee Title or Easement	Private	C1-243
07628800124589	Hamilton	1.00	1, 2, or 3	Fee Title or Easement	Private	C1-244
07628800129984	Hamilton	16.68	1, 2, or 3	Fee Title or Easement	Private	C1-245
07628800134319	Hamilton	11.82	1, 2, or 3	Fee Title or Easement	Private	C1-246
07628800149782	Hamilton	18.00	1, 2, or 3	Fee Title or Easement	Private	C1-247
07628800154571	Hamilton	73.40	1, 2, or 3	Fee Title or Easement	Private	C1-248
07628800171011	Hamilton	6.02	1, 2, or 3	Fee Title or Easement	Private	C1-249
07626800771139	Hamilton	26.48	1, 2, or 3	Fee Title or Easement	Private	C1-25
07628800172297	Hamilton	2.00	1, 2, or 3	Fee Title or Easement	Private	C1-250
07628800196394	Hamilton	87.80	1, 2, or 3	Fee Title or Easement	Private	C1-251
07628800203144	Hamilton	16.80	1, 2, or 3	Fee Title or Easement	Private	C1-252
07628800211265	Hamilton	50.00	1, 2, or 3	Fee Title or Easement	Private	C1-253
07628800297406	Hamilton	47.95	1, 2, or 3	Fee Title or Easement	Private	C1-254
07628803000948	Hamilton	1.68	1, 2, or 3	Fee Title or Easement	Private	C1-255
07628803002816	Hamilton	1.31	1, 2, or 3	Fee Title or Easement	Private	C1-256
07628900008279	Hamilton	4.25	1, 2, or 3	Fee Title or Easement	Private	C1-257

07626800802857	Hamilton	2.21	1, 2, or 3	Fee Title or Easement	Private	C1-26
07626800810624	Hamilton	2.70	1, 2, or 3	Fee Title or Easement	Private	C1-27
07626800812921	Hamilton	2.17	1, 2, or 3	Fee Title or Easement	Private	C1-28
07626800814785	Hamilton	8.33	1, 2, or 3	Fee Title or Easement	Private	C1-29
07626800299697	Hamilton	5.51	1, 2, or 3	Fee Title or Easement	Private	C1-3
07626800817491	Hamilton	5.01	1, 2, or 3	Fee Title or Easement	Private	C1-30
07626800818608	Hamilton	3.02	1, 2, or 3	Fee Title or Easement	Private	C1-31
07626800819027	Hamilton	7.60	1, 2, or 3	Fee Title or Easement	Private	C1-32
07626800819923	Hamilton	2.35	1, 2, or 3	Fee Title or Easement	Private	C1-33
07626800820185	Hamilton	2.43	1, 2, or 3	Fee Title or Easement	Private	C1-34
07626800822896	Hamilton	10.34	1, 2, or 3	Fee Title or Easement	Private	C1-35
07626800824217	Hamilton	2.38	1, 2, or 3	Fee Title or Easement	Private	C1-36
07626800827574	Hamilton	2.37	1, 2, or 3	Fee Title or Easement	Private	C1-37
07626800829483	Hamilton	2.69	1, 2, or 3	Fee Title or Easement	Private	C1-38
07626800852644	Hamilton	6.55	1, 2, or 3	Fee Title or Easement	Private	C1-39
07626800479318	Hamilton	34.08	1, 2, or 3	Fee Title or Easement	Private	C1-4
07626800863448	Hamilton	5.85	1, 2, or 3	Fee Title or Easement	Private	C1-40
07626800865577	Hamilton	4.24	1, 2, or 3	Fee Title or Easement	Private	C1-41
07626800875805	Hamilton	16.00	1, 2, or 3	Fee Title or Easement	Private	C1-42
07626800876377	Hamilton	2.84	1, 2, or 3	Fee Title or Easement	Private	C1-43
07626800879360	Hamilton	5.00	1, 2, or 3	Fee Title or Easement	Private	C1-44
07626800898296	Hamilton	60.00	1, 2, or 3	Fee Title or Easement	Private	C1-45
07626800908550	Hamilton	34.95	1, 2, or 3	Fee Title or Easement	Private	C1-46
07626800913152	Hamilton	4.24	1, 2, or 3	Fee Title or Easement	Private	C1-47
07626800913655	Hamilton	2.18	1, 2, or 3	Fee Title or Easement	Private	C1-48

07626800915375	Hamilton	3.09	1, 2, or 3	Fee Title or Easement	Private	C1-49
07626800483859	Hamilton	42.98	1, 2, or 3	Fee Title or Easement	Private	C1-5
07626800921295	Hamilton	2.25	1, 2, or 3	Fee Title or Easement	Private	C1-50
07626800922658	Hamilton	2.70	1, 2, or 3	Fee Title or Easement	Private	C1-51
07626800923083	Hamilton	2.85	1, 2, or 3	Fee Title or Easement	Private	C1-52
07626800924438	Hamilton	2.15	1, 2, or 3	Fee Title or Easement	Private	C1-53
07626800927312	Hamilton	2.87	1, 2, or 3	Fee Title or Easement	Private	C1-54
07626800928689	Hamilton	4.92	1, 2, or 3	Fee Title or Easement	Private	C1-55
07626800936410	Hamilton	2.76	1, 2, or 3	Fee Title or Easement	Private	C1-56
07626800937878	Hamilton	6.92	1, 2, or 3	Fee Title or Easement	Private	C1-57
07626800938355	Hamilton	2.58	1, 2, or 3	Fee Title or Easement	Private	C1-58
07626800944251	Hamilton	75.74	1, 2, or 3	Fee Title or Easement	Private	C1-59
07626800599637	Hamilton	71.83	1, 2, or 3	Fee Title or Easement	Private	C1-6
07626800964044	Hamilton	6.00	1, 2, or 3	Fee Title or Easement	Private	C1-60
07626800966084	Hamilton	3.00	1, 2, or 3	Fee Title or Easement	Private	C1-61
07626800968034	Hamilton	3.00	1, 2, or 3	Fee Title or Easement	Private	C1-62
07626800974916	Hamilton	8.27	1, 2, or 3	Fee Title or Easement	Private	C1-63
07626800986374	Hamilton	8.44	1, 2, or 3	Fee Title or Easement	Private	C1-64
07626900207697	Hamilton	19.51	1, 2, or 3	Fee Title or Easement	Private	C1-65
07626900302243	Hamilton	12.69	1, 2, or 3	Fee Title or Easement	Private	C1-66
07626900305496	Hamilton	1.34	1, 2, or 3	Fee Title or Easement	Private	C1-67
07626900306780	Hamilton	3.10	1, 2, or 3	Fee Title or Easement	Private	C1-68
07626900309726	Hamilton	1.97	1, 2, or 3	Fee Title or Easement	Private	C1-69
07626800633790	Hamilton	1.57	1, 2, or 3	Fee Title or Easement	Private	C1-7
07626900317454	Hamilton	17.69	1, 2, or 3	Fee Title or Easement	Private	C1-70

07626900416276	Hamilton	49.87	1, 2, or 3	Fee Title or Easement	Private	C1-71
07626900427948	Hamilton	132.99	1, 2, or 3	Fee Title or Easement	Private	C1-72
07626900513078	Hamilton	2.10	1, 2, or 3	Fee Title or Easement	Private	C1-73
07626900730178	Hamilton	110.55	1, 2, or 3	Fee Title or Easement	Private	C1-74
07626900800295	Hamilton	20.28	1, 2, or 3	Fee Title or Easement	Private	C1-75
07626900907344	Hamilton	11.20	1, 2, or 3	Fee Title or Easement	Private	C1-76
07626900919618	Hamilton	34.84	1, 2, or 3	Fee Title or Easement	Private	C1-77
07626904640397	Hamilton	19.39	1, 2, or 3	Fee Title or Easement	Private	C1-78
07627700085878	Hamilton	20.00	1, 2, or 3	Fee Title or Easement	Private	C1-79
07626800635721	Hamilton	1.57	1, 2, or 3	Fee Title or Easement	Private	C1-8
07627700089400	Hamilton	1.74	1, 2, or 3	Fee Title or Easement	Private	C1-80
07627700097598	Hamilton	17.39	1, 2, or 3	Fee Title or Easement	Private	C1-81
07627700187661	Hamilton	5.63	1, 2, or 3	Fee Title or Easement	Private	C1-82
07627700192761	Hamilton	1.06	1, 2, or 3	Fee Title or Easement	Private	C1-83
07627700197156	Hamilton	14.97	1, 2, or 3	Fee Title or Easement	Private	C1-84
07627700283861	Hamilton	1.48	1, 2, or 3	Fee Title or Easement	Private	C1-85
07627700295764	Hamilton	14.75	1, 2, or 3	Fee Title or Easement	Private	C1-86
07627700383604	Hamilton	4.41	1, 2, or 3	Fee Title or Easement	Private	C1-87
07627700385955	Hamilton	6.29	1, 2, or 3	Fee Title or Easement	Private	C1-88
07627700390367	Hamilton	10.85	1, 2, or 3	Fee Title or Easement	Private	C1-89
07626800636761	Hamilton	1.84	1, 2, or 3	Fee Title or Easement	Private	C1-9
07627700487727	Hamilton	20.24	1, 2, or 3	Fee Title or Easement	Private	C1-90
07627700593372	Hamilton	9.51	1, 2, or 3	Fee Title or Easement	Private	C1-91
07627700682841	Hamilton	18.60	1, 2, or 3	Fee Title or Easement	Private	C1-92
07627700698681	Hamilton	46.00	1, 2, or 3	Fee Title or Easement	Private	C1-93

07627700787286	Hamilton	1.62	1, 2, or 3	Fee Title or Easement	Private	C1-94
07627700796359	Hamilton	12.25	1, 2, or 3	Fee Title or Easement	Private	C1-95
07627700881451	Hamilton	2.66	1, 2, or 3	Fee Title or Easement	Private	C1-96
07627700883697	Hamilton	2.56	1, 2, or 3	Fee Title or Easement	Private	C1-97
07627700891509	Hamilton	2.07	1, 2, or 3	Fee Title or Easement	Private	C1-98
07627700893379	Hamilton	1.57	1, 2, or 3	Fee Title or Easement	Private	C1-99
07628800244492	Hamilton	1.08	1, 2, or 3	Fee Title or Easement	Private	C2-1
07628800378993	Hamilton	27.50	1, 2, or 3	Fee Title or Easement	Private	C2-10
07629800582804	Hamilton	5.00	1, 2, or 3	Fee Title or Easement	Private	C2-100
07629800587285	Hamilton	12.00	1, 2, or 3	Fee Title or Easement	Private	C2-101
07629800595146	Hamilton	7.19	1, 2, or 3	Fee Title or Easement	Private	C2-102
07629800683506	Hamilton	4.14	1, 2, or 3	Fee Title or Easement	Private	C2-103
07629800790725	Hamilton	54.09	1, 2, or 3	Fee Title or Easement	Private	C2-104
07629800880840	Hamilton	123.00	1, 2, or 3	Fee Title or Easement	Private	C2-105
07629800892618	Hamilton	4.59	1, 2, or 3	Fee Title or Easement	Private	C2-106
07629800951205	Hamilton	0.00	1, 2, or 3	Fee Title or Easement	Private	C2-107
07629900007356	Hamilton	0.19	1, 2, or 3	Fee Title or Easement	Private	C2-108
07629900007657	Hamilton	7.48	1, 2, or 3	Fee Title or Easement	Private	C2-109
07628800385923	Hamilton	1.63	1, 2, or 3	Fee Title or Easement	Private	C2-11
07629900033552	Hamilton	0.08	1, 2, or 3	Fee Title or Easement	Private	C2-110
07629900033665	Hamilton	0.85	1, 2, or 3	Fee Title or Easement	Private	C2-111
07629900041312	Hamilton	63.40	1, 2, or 3	Fee Title or Easement	Private	C2-112
07629900047428	Hamilton	13.21	1, 2, or 3	Fee Title or Easement	Private	C2-113
07629900102584	Hamilton	10.40	1, 2, or 3	Fee Title or Easement	Private	C2-114
07629900109072	Hamilton	10.05	1, 2, or 3	Fee Title or Easement	Private	C2-115

07629900142100	Hamilton	0.61	1, 2, or 3	Fee Title or Easement	Private	C2-116
07629900148713	Hamilton	4.00	1, 2, or 3	Fee Title or Easement	Private	C2-117
07629900155079	Hamilton	106.90	1, 2, or 3	Fee Title or Easement	Private	C2-118
07629900159175	Hamilton	2.95	1, 2, or 3	Fee Title or Easement	Private	C2-119
07628800393205	Hamilton	10.80	1, 2, or 3	Fee Title or Easement	Private	C2-12
07629900164083	Hamilton	3.90	1, 2, or 3	Fee Title or Easement	Private	C2-120
07629900216165	Hamilton	55.80	1, 2, or 3	Fee Title or Easement	Private	C2-121
07629900240584	Hamilton	3.74	1, 2, or 3	Fee Title or Easement	Private	C2-122
07629900241894	Hamilton	1.35	1, 2, or 3	Fee Title or Easement	Private	C2-123
07629900253951	Hamilton	1.10	1, 2, or 3	Fee Title or Easement	Private	C2-124
07629900263579	Hamilton	10.60	1, 2, or 3	Fee Title or Easement	Private	C2-125
07629900274328	Hamilton	5.62	1, 2, or 3	Fee Title or Easement	Private	C2-126
07629900278620	Hamilton	10.40	1, 2, or 3	Fee Title or Easement	Private	C2-127
07629900279148	Hamilton	1.00	1, 2, or 3	Fee Title or Easement	Private	C2-128
07629900300862	Hamilton	1.69	1, 2, or 3	Fee Title or Easement	Private	C2-129
07628800396810	Hamilton	18.85	1, 2, or 3	Fee Title or Easement	Private	C2-13
07629900301035	Hamilton	10.07	1, 2, or 3	Fee Title or Easement	Private	C2-130
07629900302827	Hamilton	1.69	1, 2, or 3	Fee Title or Easement	Private	C2-131
07629900334394	Hamilton	284.20	1, 2, or 3	Fee Title or Easement	Private	C2-132
07629900364047	Hamilton	7.56	1, 2, or 3	Fee Title or Easement	Private	C2-133
07629900364807	Hamilton	18.26	1, 2, or 3	Fee Title or Easement	Private	C2-134
07629900367782	Hamilton	2.01	1, 2, or 3	Fee Title or Easement	Private	C2-135
07629900403818	Hamilton	1.09	1, 2, or 3	Fee Title or Easement	Private	C2-136
07629900408741	Hamilton	7.07	1, 2, or 3	Fee Title or Easement	Private	C2-137
07629900409250	Hamilton	67.59	1, 2, or 3	Fee Title or Easement	Private	C2-138

07629900451188	Hamilton	18.35	1, 2, or 3	Fee Title or Easement	Private	C2-139
07628800449173	Hamilton	5.85	1, 2, or 3	Fee Title or Easement	Private	C2-14
07629900466114	Hamilton	67.09	1, 2, or 3	Fee Title or Easement	Private	C2-140
07629900511852	Hamilton	2.25	1, 2, or 3	Fee Title or Easement	Private	C2-141
07629900516311	Hamilton	22.00	1, 2, or 3	Fee Title or Easement	Private	C2-142
07629900544565	Hamilton	10.00	1, 2, or 3	Fee Title or Easement	Private	C2-143
07629900604543	Hamilton	21.00	1, 2, or 3	Fee Title or Easement	Private	C2-144
07629900612352	Hamilton	11.62	1, 2, or 3	Fee Title or Easement	Private	C2-145
07629900700753	Hamilton	2.27	1, 2, or 3	Fee Title or Easement	Private	C2-146
07629900711307	Hamilton	21.38	1, 2, or 3	Fee Title or Easement	Private	C2-147
07629900804967	Hamilton	23.50	1, 2, or 3	Fee Title or Easement	Private	C2-148
07629900806439	Hamilton	7.00	1, 2, or 3	Fee Title or Easement	Private	C2-149
07628800485317	Hamilton	41.22	1, 2, or 3	Fee Title or Easement	Private	C2-15
07629901256438	Hamilton	1.70	1, 2, or 3	Fee Title or Easement	Private	C2-150
07629901257538	Hamilton	2.20	1, 2, or 3	Fee Title or Easement	Private	C2-151
07629901258634	Hamilton	1.30	1, 2, or 3	Fee Title or Easement	Private	C2-152
07629901266033	Hamilton	1.30	1, 2, or 3	Fee Title or Easement	Private	C2-153
07629901350547	Hamilton	3.80	1, 2, or 3	Fee Title or Easement	Private	C2-154
07629901350984	Hamilton	1.00	1, 2, or 3	Fee Title or Easement	Private	C2-155
07629901353447	Hamilton	5.98	1, 2, or 3	Fee Title or Easement	Private	C2-156
07629901354578	Hamilton	5.40	1, 2, or 3	Fee Title or Easement	Private	C2-157
07629901360423	Hamilton	5.70	1, 2, or 3	Fee Title or Easement	Private	C2-158
07629901363520	Hamilton	0.28	1, 2, or 3	Fee Title or Easement	Private	C2-159
07628800491350	Hamilton	0.68	1, 2, or 3	Fee Title or Easement	Private	C2-16
07628800493308	Hamilton	0.47	1, 2, or 3	Fee Title or Easement	Private	C2-17

07628800530730	Hamilton	2.39	1, 2, or 3	Fee Title or Easement	Private	C2-18
07628800644279	Hamilton	60.41	1, 2, or 3	Fee Title or Easement	Private	C2-19
07628800249736	Hamilton	3.51	1, 2, or 3	Fee Title or Easement	Private	C2-2
07628800683469	Hamilton	5.70	1, 2, or 3	Fee Title or Easement	Private	C2-20
07628800687804	Hamilton	2.55	1, 2, or 3	Fee Title or Easement	Private	C2-21
07628800691258	Hamilton	3.30	1, 2, or 3	Fee Title or Easement	Private	C2-22
07628800698389	Hamilton	27.84	1, 2, or 3	Fee Title or Easement	Private	C2-23
07628800755072	Hamilton	18.30	1, 2, or 3	Fee Title or Easement	Private	C2-24
07628800756387	Hamilton	5.27	1, 2, or 3	Fee Title or Easement	Private	C2-25
07628800766518	Hamilton	8.32	1, 2, or 3	Fee Title or Easement	Private	C2-26
07628800784960	Hamilton	4.56	1, 2, or 3	Fee Title or Easement	Private	C2-27
07628800786747	Hamilton	4.84	1, 2, or 3	Fee Title or Easement	Private	C2-28
07628800842938	Hamilton	5.75	1, 2, or 3	Fee Title or Easement	Private	C2-29
07628800256005	Hamilton	7.86	1, 2, or 3	Fee Title or Easement	Private	C2-3
07628800855499	Hamilton	22.78	1, 2, or 3	Fee Title or Easement	Private	C2-30
07628800862240	Hamilton	25.10	1, 2, or 3	Fee Title or Easement	Private	C2-31
07628800878569	Hamilton	40.00	1, 2, or 3	Fee Title or Easement	Private	C2-32
07628800931286	Hamilton	16.92	1, 2, or 3	Fee Title or Easement	Private	C2-33
07628800937389	Hamilton	20.36	1, 2, or 3	Fee Title or Easement	Private	C2-34
07628800946429	Hamilton	7.25	1, 2, or 3	Fee Title or Easement	Private	C2-35
07628800950890	Hamilton	3.39	1, 2, or 3	Fee Title or Easement	Private	C2-36
07628800958302	Hamilton	6.00	1, 2, or 3	Fee Title or Easement	Private	C2-37
07628800979071	Hamilton	80.24	1, 2, or 3	Fee Title or Easement	Private	C2-38
07628800993084	Hamilton	56.73	1, 2, or 3	Fee Title or Easement	Private	C2-39
07628800267352	Hamilton	5.00	1, 2, or 3	Fee Title or Easement	Private	C2-4

07628803248068	Hamilton	4.19	1, 2, or 3	Fee Title or Easement	Private	C2-40
07628900400528	Hamilton	43.32	1, 2, or 3	Fee Title or Easement	Private	C2-41
07628900404856	Hamilton	6.90	1, 2, or 3	Fee Title or Easement	Private	C2-42
07628900421220	Hamilton	147.57	1, 2, or 3	Fee Title or Easement	Private	C2-43
07628900504260	Hamilton	1.05	1, 2, or 3	Fee Title or Easement	Private	C2-44
07628900509570	Hamilton	97.70	1, 2, or 3	Fee Title or Easement	Private	C2-45
07628900519443	Hamilton	17.21	1, 2, or 3	Fee Title or Easement	Private	C2-46
07628900607830	Hamilton	12.14	1, 2, or 3	Fee Title or Easement	Private	C2-47
07628900616199	Hamilton	0.14	1, 2, or 3	Fee Title or Easement	PUBLIC	C2-48
07628900616921	Hamilton	24.91	1, 2, or 3	Fee Title or Easement	Private	C2-49
07628800340530	Hamilton	8.04	1, 2, or 3	Fee Title or Easement	Private	C2-5
07628900623751	Hamilton	28.15	1, 2, or 3	Fee Title or Easement	Private	C2-50
07628900631350	Hamilton	5.10	1, 2, or 3	Fee Title or Easement	Private	C2-51
07628900634598	Hamilton	5.22	1, 2, or 3	Fee Title or Easement	Private	C2-52
07628900714868	Hamilton	7.08	1, 2, or 3	Fee Title or Easement	Private	C2-53
07628900717442	Hamilton	1.87	1, 2, or 3	Fee Title or Easement	Private	C2-54
07628900718181	Hamilton	0.41	1, 2, or 3	Fee Title or Easement	Private	C2-55
07628900718539	Hamilton	3.03	1, 2, or 3	Fee Title or Easement	Private	C2-56
07628900723666	Hamilton	2.40	1, 2, or 3	Fee Title or Easement	Private	C2-57
07628900725432	Hamilton	1.56	1, 2, or 3	Fee Title or Easement	Private	C2-58
07628900730426	Hamilton	7.52	1, 2, or 3	Fee Title or Easement	Private	C2-59
07628800360340	Hamilton	7.99	1, 2, or 3	Fee Title or Easement	Private	C2-6
07628900734683	Hamilton	4.51	1, 2, or 3	Fee Title or Easement	Private	C2-60
07628900801464	Hamilton	99.49	1, 2, or 3	Fee Title or Easement	Private	C2-61
07628900807178	Hamilton	10.59	1, 2, or 3	Fee Title or Easement	Private	C2-62

07628900810607	Hamilton	1.17	1, 2, or 3	Fee Title or Easement	Private	C2-63
07628900810871	Hamilton	2.13	1, 2, or 3	Fee Title or Easement	Private	C2-64
07628900812331	Hamilton	1.33	1, 2, or 3	Fee Title or Easement	Private	C2-65
07628900812935	Hamilton	2.20	1, 2, or 3	Fee Title or Easement	Private	C2-66
07628900813462	Hamilton	1.40	1, 2, or 3	Fee Title or Easement	Private	C2-67
07628900814552	Hamilton	1.39	1, 2, or 3	Fee Title or Easement	Private	C2-68
07628900815646	Hamilton	1.28	1, 2, or 3	Fee Title or Easement	Private	C2-69
07628800367465	Hamilton	30.45	1, 2, or 3	Fee Title or Easement	Private	C2-7
07628900816738	Hamilton	1.26	1, 2, or 3	Fee Title or Easement	Private	C2-70
07628900817829	Hamilton	1.36	1, 2, or 3	Fee Title or Easement	Private	C2-71
07628900827098	Hamilton	1.00	1, 2, or 3	Fee Title or Easement	Private	C2-72
07628900904729	Hamilton	1.11	1, 2, or 3	Fee Title or Easement	Private	C2-73
07628900906713	Hamilton	2.52	1, 2, or 3	Fee Title or Easement	Private	C2-74
07628900926543	Hamilton	204.84	1, 2, or 3	Fee Title or Easement	Private	C2-75
07628900937710	Hamilton	17.51	1, 2, or 3	Fee Title or Easement	Private	C2-76
07629800030658	Hamilton	0.00	1, 2, or 3	Fee Title or Easement	Private	C2-77
07629800044161	Hamilton	30.00	1, 2, or 3	Fee Title or Easement	Private	C2-78
07629800050601	Hamilton	9.20	1, 2, or 3	Fee Title or Easement	Private	C2-79
07628800372127	Hamilton	9.05	1, 2, or 3	Fee Title or Easement	Private	C2-8
07629800085043	Hamilton	24.73	1, 2, or 3	Fee Title or Easement	Private	C2-80
07629800140997	Hamilton	59.00	1, 2, or 3	Fee Title or Easement	Private	C2-81
07629800178013	Hamilton	12.44	1, 2, or 3	Fee Title or Easement	Private	C2-82
07629800192536	Hamilton	9.26	1, 2, or 3	Fee Title or Easement	Private	C2-83
07629800192996	Hamilton	1.00	1, 2, or 3	Fee Title or Easement	Private	C2-84
07629800195396	Hamilton	8.96	1, 2, or 3	Fee Title or Easement	Private	C2-85

07629800198173	Hamilton	13.70	1, 2, or 3	Fee Title or Easement	Private	C2-86
07629800199559	Hamilton	1.14	1, 2, or 3	Fee Title or Easement	Private	C2-87
07629800263037	Hamilton	111.29	1, 2, or 3	Fee Title or Easement	Private	C2-88
07629800277784	Hamilton	2.10	1, 2, or 3	Fee Title or Easement	Private	C2-89
07628800372702	Hamilton	14.14	1, 2, or 3	Fee Title or Easement	Private	C2-9
07629800288042	Hamilton	69.96	1, 2, or 3	Fee Title or Easement	Private	C2-90
07629800289460	Hamilton	12.50	1, 2, or 3	Fee Title or Easement	Private	C2-91
07629800294652	Hamilton	1.58	1, 2, or 3	Fee Title or Easement	Private	C2-92
07629800294989	Hamilton	3.13	1, 2, or 3	Fee Title or Easement	Private	C2-93
07629800296868	Hamilton	2.50	1, 2, or 3	Fee Title or Easement	Private	C2-94
07629800370139	Hamilton	9.70	1, 2, or 3	Fee Title or Easement	Private	C2-95
07629800381822	Hamilton	10.90	1, 2, or 3	Fee Title or Easement	Private	C2-96
07629800470945	Hamilton	45.95	1, 2, or 3	Fee Title or Easement	Private	C2-97
07629800487643	Hamilton	114.65	1, 2, or 3	Fee Title or Easement	Private	C2-98
07629800492898	Hamilton	25.80	1, 2, or 3	Fee Title or Easement	Private	C2-99
07627600591637	Hamilton	16.50	1, 2, or 3	Fee Title or Easement	Private	C3-1
07627700528741	Hamilton	5.01	1, 2, or 3	Fee Title or Easement	Private	C3-10
07627700534774	Hamilton	22.65	1, 2, or 3	Fee Title or Easement	Private	C3-11
07627700553947	Hamilton	0.63	1, 2, or 3	Fee Title or Easement	Private	C3-12
07627700554530	Hamilton	5.80	1, 2, or 3	Fee Title or Easement	Private	C3-13
07627700557632	Hamilton	3.63	1, 2, or 3	Fee Title or Easement	Private	C3-14
07627700559734	Hamilton	4.44	1, 2, or 3	Fee Title or Easement	Private	C3-15
07627700564065	Hamilton	2.16	1, 2, or 3	Fee Title or Easement	Private	C3-16
07627700564441	Hamilton	4.28	1, 2, or 3	Fee Title or Easement	Private	C3-17
07627700567237	Hamilton	2.24	1, 2, or 3	Fee Title or Easement	Private	C3-18

07627700586200	Hamilton	20.01	1, 2, or 3	Fee Title or Easement	Private	C3-19
07627600681383	Hamilton	101.75	1, 2, or 3	Fee Title or Easement	Private	C3-2
07627700651901	Hamilton	3.54	1, 2, or 3	Fee Title or Easement	Private	C3-20
07627700662083	Hamilton	3.78	1, 2, or 3	Fee Title or Easement	Private	C3-21
07627700664163	Hamilton	3.53	1, 2, or 3	Fee Title or Easement	Private	C3-22
07627700667968	Hamilton	4.05	1, 2, or 3	Fee Title or Easement	Private	C3-23
07627700672952	Hamilton	17.91	1, 2, or 3	Fee Title or Easement	Private	C3-24
07627700673023	Hamilton	4.81	1, 2, or 3	Fee Title or Easement	Private	C3-25
07627700676323	Hamilton	2.55	1, 2, or 3	Fee Title or Easement	Private	C3-26
07627700678676	Hamilton	3.63	1, 2, or 3	Fee Title or Easement	Private	C3-27
07627700789101	Hamilton	2.38	1, 2, or 3	Fee Title or Easement	Private	C3-28
07627700839973	Hamilton	6.72	1, 2, or 3	Fee Title or Easement	Private	C3-29
07627700425949	Hamilton	80.70	1, 2, or 3	Fee Title or Easement	Private	C3-3
07627700852219	Hamilton	114.72	1, 2, or 3	Fee Title or Easement	Private	C3-30
07627700957942	Hamilton	156.70	1, 2, or 3	Fee Title or Easement	Private	C3-31
07627704639307	Hamilton	144.00	1, 2, or 3	Fee Title or Easement	Private	C3-32
07627704700915	Hamilton	19.27	1, 2, or 3	Fee Title or Easement	Private	C3-33
07627704735901	Hamilton	0.80	1, 2, or 3	Fee Title or Easement	Private	C3-34
07627704736721	Hamilton	3.10	1, 2, or 3	Fee Title or Easement	Private	C3-35
07627704739837	Hamilton	4.50	1, 2, or 3	Fee Title or Easement	Private	C3-36
07627704744372	Hamilton	1.04	1, 2, or 3	Fee Title or Easement	Private	C3-37
07627704745007	Hamilton	2.42	1, 2, or 3	Fee Title or Easement	Private	C3-38
07627704745201	Hamilton	0.61	1, 2, or 3	Fee Title or Easement	Private	C3-39
07627700443699	Hamilton	33.36	1, 2, or 3	Fee Title or Easement	Private	C3-4
07627704745206	Hamilton	0.55	1, 2, or 3	Fee Title or Easement	Private	C3-40

07627705071632	Hamilton	0.46	1, 2, or 3	Fee Title or Easement	Private	C3-41
07627705075975	Hamilton	2.33	1, 2, or 3	Fee Title or Easement	Private	C3-42
07627705080069	Hamilton	0.13	1, 2, or 3	Fee Title or Easement	Private	C3-43
07627705087141	Hamilton	1.34	1, 2, or 3	Fee Title or Easement	Private	C3-44
07627705187243	Hamilton	5.71	1, 2, or 3	Fee Title or Easement	Private	C3-45
07627706387305	Hamilton	1.04	1, 2, or 3	Fee Title or Easement	Private	C3-46
07628700113204	Hamilton	3212.50	1, 2, or 3	Fee Title or Easement	Private	C3-47
07628700149757	Hamilton	27.50	1, 2, or 3	Fee Title or Easement	Private	C3-48
07628700381426	Hamilton	133.27	1, 2, or 3	Fee Title or Easement	Private	C3-49
07627700457439	Hamilton	0.75	1, 2, or 3	Fee Title or Easement	Private	C3-5
07628700395677	Hamilton	0.00	1, 2, or 3	Fee Title or Easement	Private	C3-50
07628700398000	Hamilton	2.00	1, 2, or 3	Fee Title or Easement	Private	C3-51
07628700496596	Hamilton	1.00	1, 2, or 3	Fee Title or Easement	Private	C3-52
07628700596799	Hamilton	9.14	1, 2, or 3	Fee Title or Easement	Private	C3-53
07628800402256	Hamilton	30.00	1, 2, or 3	Fee Title or Easement	Private	C3-54
0762880042xxxx	Hamilton	0.00	1, 2, or 3	Fee Title or Easement	Private	C3-55
07628800500043	Hamilton	1.69	1, 2, or 3	Fee Title or Easement	Private	C3-56
07628800503567	Hamilton	19.45	1, 2, or 3	Fee Title or Easement	Private	C3-57
07628800515018	Hamilton	6.70	1, 2, or 3	Fee Title or Easement	Private	C3-58
07628800517216	Hamilton	4.80	1, 2, or 3	Fee Title or Easement	Private	C3-59
07627700458898	Hamilton	4.58	1, 2, or 3	Fee Title or Easement	Private	C3-6
07628800518859	Hamilton	3.80	1, 2, or 3	Fee Title or Easement	Private	C3-60
07628800521327	Hamilton	48.03	1, 2, or 3	Fee Title or Easement	Private	C3-61
07628800528340	Hamilton	17.10	1, 2, or 3	Fee Title or Easement	Private	C3-62
07628800602159	Hamilton	8.46	1, 2, or 3	Fee Title or Easement	Private	C3-63

07628800604398	Hamilton	6.61	1, 2, or 3	Fee Title or Easement	Private	C3-64
07628800606650	Hamilton	6.28	1, 2, or 3	Fee Title or Easement	Private	C3-65
07628800610229	Hamilton	7.47	1, 2, or 3	Fee Title or Easement	Private	C3-66
07628800621734	Hamilton	17.00	1, 2, or 3	Fee Title or Easement	Private	C3-67
07628800700928	Hamilton	26.80	1, 2, or 3	Fee Title or Easement	Private	C3-68
07628800713556	Hamilton	23.50	1, 2, or 3	Fee Title or Easement	Private	C3-69
07627700474653	Hamilton	36.37	1, 2, or 3	Fee Title or Easement	Private	C3-7
07628800723492	Hamilton	39.00	1, 2, or 3	Fee Title or Easement	Private	C3-70
07628800829235	Hamilton	5.13	1, 2, or 3	Fee Title or Easement	Private	C3-71
07628800830038	Hamilton	63.00	1, 2, or 3	Fee Title or Easement	Private	C3-72
07628800925576	Hamilton	0.00	1, 2, or 3	Fee Title or Easement	Private	C3-73
07628803227014	Hamilton	5.91	1, 2, or 3	Fee Title or Easement	Private	C3-74
07628803228506	Hamilton	1.24	1, 2, or 3	Fee Title or Easement	Private	C3-75
07628803313541	Hamilton	1.43	1, 2, or 3	Fee Title or Easement	Private	C3-76
07628803316075	Hamilton	15.00	1, 2, or 3	Fee Title or Easement	Private	C3-77
07628803318824	Hamilton	11.12	1, 2, or 3	Fee Title or Easement	Private	C3-78
07628803322831	Hamilton	3.81	1, 2, or 3	Fee Title or Easement	Private	C3-79
07627700508702	Hamilton	119.00	1, 2, or 3	Fee Title or Easement	Private	C3-8
07628803323974	Hamilton	25.28	1, 2, or 3	Fee Title or Easement	Private	C3-80
07628803326143	Hamilton	4.03	1, 2, or 3	Fee Title or Easement	Private	C3-81
07629700274953	Hamilton	1.11	1, 2, or 3	Fee Title or Easement	Private	C3-82
07629700285032	Hamilton	1.80	1, 2, or 3	Fee Title or Easement	Private	C3-83
07629700285997	Hamilton	311.00	1, 2, or 3	Fee Title or Easement	Private	C3-84
07629700286133	Hamilton	1.60	1, 2, or 3	Fee Title or Easement	Private	C3-85
07629700362929	Hamilton	3.50	1, 2, or 3	Fee Title or Easement	Private	C3-86

07629700369993	Hamilton	0.19	1, 2, or 3	Fee Title or Easement	Private	C3-87
07629700370948	Hamilton	0.23	1, 2, or 3	Fee Title or Easement	Private	C3-88
07629700370965	Hamilton	0.00	1, 2, or 3	Fee Title or Easement	Private	C3-89
07627700526325	Hamilton	1.07	1, 2, or 3	Fee Title or Easement	Private	C3-9
07629700370991	Hamilton	0.00	1, 2, or 3	Fee Title or Easement	Private	C3-90
07629700371862	Hamilton	0.27	1, 2, or 3	Fee Title or Easement	Private	C3-91
07629700373701	Hamilton	3.32	1, 2, or 3	Fee Title or Easement	Private	C3-92
07629700376032	Hamilton	0.09	1, 2, or 3	Fee Title or Easement	Private	C3-93
07629700377097	Hamilton	2.00	1, 2, or 3	Fee Title or Easement	Private	C3-94
07629700379052	Hamilton	0.18	1, 2, or 3	Fee Title or Easement	Private	C3-95
07629700461780	Hamilton	0.18	1, 2, or 3	Fee Title or Easement	Private	C3-96
07629700462755	Hamilton	0.18	1, 2, or 3	Fee Title or Easement	Private	C3-97
07629700471001	Hamilton	0.18	1, 2, or 3	Fee Title or Easement	Private	C3-98
07629800128491	Hamilton	117.32	1, 2, or 3	Fee Title or Easement	Private	C3-99
15625700866005	Ross	101.00	1, 2, or 3	Fee Title or Easement	Private	B1-1
15626600799657	Ross	1.45	1, 2, or 3	Fee Title or Easement	Private	B1-10
15626800207328	Ross	15.10	1, 2, or 3	Fee Title or Easement	Private	B1-100
15626800303728	Ross	13.19	1, 2, or 3	Fee Title or Easement	Private	B1-101
15626800308355	Ross	4.78	1, 2, or 3	Fee Title or Easement	Private	B1-102
15626800314398	Ross	2.58	1, 2, or 3	Fee Title or Easement	Private	B1-103
15626800318300	Ross	3.67	1, 2, or 3	Fee Title or Easement	Private	B1-104
15626800319167	Ross	2.51	1, 2, or 3	Fee Title or Easement	Private	B1-105
15626800402905	Ross	2.78	1, 2, or 3	Fee Title or Easement	Private	B1-106
15626800403822	Ross	2.91	1, 2, or 3	Fee Title or Easement	Private	B1-107
15626800404740	Ross	2.70	1, 2, or 3	Fee Title or Easement	Private	B1-108

15626800410075	Ross	2.62	1, 2, or 3	Fee Title or Easement	Private	B1-109
15626600881619	Ross	6.56	1, 2, or 3	Fee Title or Easement	Private	B1-11
15626800411926	Ross	11.02	1, 2, or 3	Fee Title or Easement	Private	B1-110
15626800419497	Ross	36.23	1, 2, or 3	Fee Title or Easement	Private	B1-111
15626800501222	Ross	13.22	1, 2, or 3	Fee Title or Easement	Private	B1-112
15626800517660	Ross	13.49	1, 2, or 3	Fee Title or Easement	Private	B1-113
15626800600626	Ross	2.00	1, 2, or 3	Fee Title or Easement	Private	B1-114
15626800608764	Ross	52.47	1, 2, or 3	Fee Title or Easement	Private	B1-115
15626800610787	Ross	17.56	1, 2, or 3	Fee Title or Easement	Private	B1-116
15626800617768	Ross	1.13	1, 2, or 3	Fee Title or Easement	Private	B1-117
15626800623684	Ross	23.90	1, 2, or 3	Fee Title or Easement	Private	B1-118
15626800711471	Ross	0.00	1, 2, or 3	Fee Title or Easement	Private	B1-119
15626600884785	Ross	1.00	1, 2, or 3	Fee Title or Easement	Private	B1-12
15626800711812	Ross	5.28	1, 2, or 3	Fee Title or Easement	Private	B1-120
15626800800319	Ross	19.54	1, 2, or 3	Fee Title or Easement	Private	B1-121
15627600297780	Ross	80.00	1, 2, or 3	Fee Title or Easement	Private	B1-122
15627600395140	Ross	14.82	1, 2, or 3	Fee Title or Easement	Private	B1-123
15627600487924	Ross	35.28	1, 2, or 3	Fee Title or Easement	Private	B1-124
15627600491626	Ross	37.90	1, 2, or 3	Fee Title or Easement	Private	B1-125
15627700001753	Ross	0.00	1, 2, or 3	Fee Title or Easement	Private	B1-126
15627700021302	Ross	10.60	1, 2, or 3	Fee Title or Easement	Private	B1-127
15627700027735	Ross	9.00	1, 2, or 3	Fee Title or Easement	Private	B1-128
15627700123245	Ross	54.00	1, 2, or 3	Fee Title or Easement	Private	B1-129
15626600892343	Ross	0.35	1, 2, or 3	Fee Title or Easement	Private	B1-13
15627700136155	Ross	4.63	1, 2, or 3	Fee Title or Easement	Private	B1-130

15627700213308	Ross	79.00	1, 2, or 3	Fee Title or Easement	Private	B1-131
15626600892386	Ross	0.35	1, 2, or 3	Fee Title or Easement	Private	B1-14
15626600893328	Ross	0.35	1, 2, or 3	Fee Title or Easement	Private	B1-15
15626600893461	Ross	0.35	1, 2, or 3	Fee Title or Easement	Private	B1-16
15626600894099	Ross	0.52	1, 2, or 3	Fee Title or Easement	Private	B1-17
15626600995510	Ross	85.71	1, 2, or 3	Fee Title or Easement	Private	B1-18
15626700060583	Ross	23.92	1, 2, or 3	Fee Title or Easement	Private	B1-19
15625700970477	Ross	0.84	1, 2, or 3	Fee Title or Easement	Private	B1-2
15626700071132	Ross	35.22	1, 2, or 3	Fee Title or Easement	Private	B1-20
15626700154977	Ross	13.49	1, 2, or 3	Fee Title or Easement	Private	B1-21
15626700155395	Ross	1.66	1, 2, or 3	Fee Title or Easement	Private	B1-22
15626700168976	Ross	5.28	1, 2, or 3	Fee Title or Easement	Private	B1-23
15626700174280	Ross	3.71	1, 2, or 3	Fee Title or Easement	Private	B1-24
15626700175099	Ross	2.19	1, 2, or 3	Fee Title or Easement	Private	B1-25
15626700177014	Ross	2.49	1, 2, or 3	Fee Title or Easement	Private	B1-26
15626700259833	Ross	53.17	1, 2, or 3	Fee Title or Easement	Private	B1-27
15626700261999	Ross	6.36	1, 2, or 3	Fee Title or Easement	Private	B1-28
15626700266583	Ross	25.90	1, 2, or 3	Fee Title or Easement	Private	B1-29
15625700971193	Ross	3.54	1, 2, or 3	Fee Title or Easement	Private	B1-3
15626700269958	Ross	1.28	1, 2, or 3	Fee Title or Easement	Private	B1-30
15626700274295	Ross	5.66	1, 2, or 3	Fee Title or Easement	Private	B1-31
15626700359475	Ross	18.56	1, 2, or 3	Fee Title or Easement	Private	B1-32
15626700372105	Ross	1.30	1, 2, or 3	Fee Title or Easement	Private	B1-33
15626700374210	Ross	0.80	1, 2, or 3	Fee Title or Easement	Private	B1-34
15626700386584	Ross	61.45	1, 2, or 3	Fee Title or Easement	Private	B1-35

15626700392628	Ross	14.76	1, 2, or 3	Fee Title or Easement	Private	B1-36
15626700397481	Ross	17.57	1, 2, or 3	Fee Title or Easement	Private	B1-37
15626700426013	Ross	72.02	1, 2, or 3	Fee Title or Easement	Private	B1-38
15626700474279	Ross	61.68	1, 2, or 3	Fee Title or Easement	Private	B1-39
15625700972518	Ross	1.05	1, 2, or 3	Fee Title or Easement	Private	B1-4
15626700496642	Ross	22.81	1, 2, or 3	Fee Title or Easement	Private	B1-40
15626700532982	Ross	1.62	1, 2, or 3	Fee Title or Easement	Private	B1-41
15626700539460	Ross	20.97	1, 2, or 3	Fee Title or Easement	Private	B1-42
15626700550597	Ross	46.31	1, 2, or 3	Fee Title or Easement	Private	B1-43
15626700564426	Ross	3.70	1, 2, or 3	Fee Title or Easement	Private	B1-44
15626700575498	Ross	10.00	1, 2, or 3	Fee Title or Easement	Private	B1-45
15626700584252	Ross	31.81	1, 2, or 3	Fee Title or Easement	Private	B1-46
15626700610692	Ross	23.90	1, 2, or 3	Fee Title or Easement	Private	B1-47
15626700618670	Ross	18.40	1, 2, or 3	Fee Title or Easement	Private	B1-48
15626700621953	Ross	1.20	1, 2, or 3	Fee Title or Easement	Private	B1-49
15626600597695	Ross	47.98	1, 2, or 3	Fee Title or Easement	Private	B1-5
15626700624214	Ross	7.80	1, 2, or 3	Fee Title or Easement	Private	B1-50
15626700633734	Ross	24.23	1, 2, or 3	Fee Title or Easement	Private	B1-51
15626700640747	Ross	5.90	1, 2, or 3	Fee Title or Easement	Private	B1-52
15626700646052	Ross	24.23	1, 2, or 3	Fee Title or Easement	Private	B1-53
15626700652185	Ross	5.85	1, 2, or 3	Fee Title or Easement	Private	B1-54
15626700659021	Ross	2.53	1, 2, or 3	Fee Title or Easement	Private	B1-55
15626700661427	Ross	34.13	1, 2, or 3	Fee Title or Easement	Private	B1-56
15626700671835	Ross	4.96	1, 2, or 3	Fee Title or Easement	Private	B1-57
15626700678713	Ross	1.00	1, 2, or 3	Fee Title or Easement	Private	B1-58

15626700679581	Ross	0.38	1, 2, or 3	Fee Title or Easement	Private	B1-59
15626600693774	Ross	5.47	1, 2, or 3	Fee Title or Easement	Private	B1-6
15626700686862	Ross	14.00	1, 2, or 3	Fee Title or Easement	Private	B1-60
15626700698761	Ross	31.00	1, 2, or 3	Fee Title or Easement	Private	B1-61
15626700702526	Ross	21.30	1, 2, or 3	Fee Title or Easement	Private	B1-62
15626700724194	Ross	32.05	1, 2, or 3	Fee Title or Easement	Private	B1-63
15626700726758	Ross	1.78	1, 2, or 3	Fee Title or Easement	Private	B1-64
15626700742148	Ross	21.60	1, 2, or 3	Fee Title or Easement	Private	B1-65
15626700742822	Ross	2.09	1, 2, or 3	Fee Title or Easement	Private	B1-66
15626700753540	Ross	33.50	1, 2, or 3	Fee Title or Easement	Private	B1-67
15626700754057	Ross	1.93	1, 2, or 3	Fee Title or Easement	Private	B1-68
15626700758097	Ross	1.28	1, 2, or 3	Fee Title or Easement	Private	B1-69
15626600697785	Ross	4.40	1, 2, or 3	Fee Title or Easement	Private	B1-7
15626700760762	Ross	4.84	1, 2, or 3	Fee Title or Easement	Private	B1-70
15626700767129	Ross	7.26	1, 2, or 3	Fee Title or Easement	Private	B1-71
15626700773934	Ross	2.83	1, 2, or 3	Fee Title or Easement	Private	B1-72
15626700780177	Ross	3.05	1, 2, or 3	Fee Title or Easement	Private	B1-73
15626700781093	Ross	2.83	1, 2, or 3	Fee Title or Easement	Private	B1-74
15626700782554	Ross	1.42	1, 2, or 3	Fee Title or Easement	Private	B1-75
15626700801112	Ross	7.80	1, 2, or 3	Fee Title or Easement	Private	B1-76
15626700822916	Ross	34.70	1, 2, or 3	Fee Title or Easement	Private	B1-77
15626700829695	Ross	0.58	1, 2, or 3	Fee Title or Easement	Private	B1-78
15626700834878	Ross	24.18	1, 2, or 3	Fee Title or Easement	Private	B1-79
15626600699285	Ross	5.45	1, 2, or 3	Fee Title or Easement	Private	B1-8
15626700837027	Ross	0.58	1, 2, or 3	Fee Title or Easement	Private	B1-80

15626700866094	Ross	3.54	1, 2, or 3	Fee Title or Easement	Private	B1-81
15626700869973	Ross	34.31	1, 2, or 3	Fee Title or Easement	Private	B1-82
15626700883806	Ross	49.27	1, 2, or 3	Fee Title or Easement	Private	B1-83
15626700890558	Ross	15.13	1, 2, or 3	Fee Title or Easement	Private	B1-84
15626700896794	Ross	5.95	1, 2, or 3	Fee Title or Easement	Private	B1-85
15626700903473	Ross	0.84	1, 2, or 3	Fee Title or Easement	Private	B1-86
15626700907467	Ross	11.82	1, 2, or 3	Fee Title or Easement	Private	B1-87
15626700910386	Ross	79.01	1, 2, or 3	Fee Title or Easement	Private	B1-88
15626700920986	Ross	1.95	1, 2, or 3	Fee Title or Easement	Private	B1-89
15626600799044	Ross	9.62	1, 2, or 3	Fee Title or Easement	Private	B1-9
15626700921701	Ross	3.47	1, 2, or 3	Fee Title or Easement	Private	B1-90
15626700937102	Ross	34.68	1, 2, or 3	Fee Title or Easement	Private	B1-91
15626700954274	Ross	3.11	1, 2, or 3	Fee Title or Easement	Private	B1-92
15626700971741	Ross	2.21	1, 2, or 3	Fee Title or Easement	Private	B1-93
15626703306659	Ross	1.94	1, 2, or 3	Fee Title or Easement	Private	B1-94
15626703308617	Ross	2.07	1, 2, or 3	Fee Title or Easement	Private	B1-95
15626703309841	Ross	3.86	1, 2, or 3	Fee Title or Easement	Private	B1-96
15626703401848	Ross	4.48	1, 2, or 3	Fee Title or Easement	Private	B1-97
15626703403946	Ross	5.01	1, 2, or 3	Fee Title or Easement	Private	B1-98
15626800205709	Ross	1.02	1, 2, or 3	Fee Title or Easement	Private	B1-99
15625600809880	Ross	1538.00	1, 2, or 3	Fee Title or Easement	Private	B2-1
15626500691305	Ross	22.98	1, 2, or 3	Fee Title or Easement	Private	B2-10
15627600262074	Ross	11.00	1, 2, or 3	Fee Title or Easement	Private	B2-100
15627600271048	Ross	1.49	1, 2, or 3	Fee Title or Easement	Private	B2-101
15627600273206	Ross	1.34	1, 2, or 3	Fee Title or Easement	Private	B2-102

15627600276589	Ross	1.26	1, 2, or 3	Fee Title or Easement	Private	B2-103
15627600277714	Ross	0.45	1, 2, or 3	Fee Title or Easement	Private	B2-104
15627600287338	Ross	2.31	1, 2, or 3	Fee Title or Easement	Private	B2-105
15627600289231	Ross	0.38	1, 2, or 3	Fee Title or Easement	Private	B2-106
15627600332151	Ross	3.32	1, 2, or 3	Fee Title or Easement	Private	B2-107
15627600337492	Ross	2.94	1, 2, or 3	Fee Title or Easement	Private	B2-108
15627600351904	Ross	13.89	1, 2, or 3	Fee Title or Easement	Private	B2-109
15626500696611	Ross	8.93	1, 2, or 3	Fee Title or Easement	Private	B2-11
15627600366136	Ross	6.31	1, 2, or 3	Fee Title or Easement	Private	B2-110
15627600366621	Ross	9.11	1, 2, or 3	Fee Title or Easement	Private	B2-111
15627600373723	Ross	9.88	1, 2, or 3	Fee Title or Easement	Private	B2-112
15627600377339	Ross	1.89	1, 2, or 3	Fee Title or Easement	Private	B2-113
15627600386443	Ross	0.18	1, 2, or 3	Fee Title or Easement	Private	B2-114
15627600430326	Ross	0.00	1, 2, or 3	Fee Title or Easement	Private	B2-115
15627600432221	Ross	2.50	1, 2, or 3	Fee Title or Easement	Private	B2-116
15627600441947	Ross	1.12	1, 2, or 3	Fee Title or Easement	Private	B2-117
15627600443988	Ross	2.59	1, 2, or 3	Fee Title or Easement	Private	B2-118
15627600452781	Ross	4.45	1, 2, or 3	Fee Title or Easement	Private	B2-119
15626500699940	Ross	1.73	1, 2, or 3	Fee Title or Easement	Private	B2-12
15627600460883	Ross	13.32	1, 2, or 3	Fee Title or Easement	Private	B2-120
15627600462024	Ross	3.35	1, 2, or 3	Fee Title or Easement	Private	B2-121
15627600463075	Ross	0.21	1, 2, or 3	Fee Title or Easement	Private	B2-122
15627600480164	Ross	26.72	1, 2, or 3	Fee Title or Easement	Private	B2-123
15627600524515	Ross	71.17	1, 2, or 3	Fee Title or Easement	Private	B2-124
15627600540376	Ross	0.61	1, 2, or 3	Fee Title or Easement	Private	B2-125

15627600546389	Ross	124.12	1, 2, or 3	Fee Title or Easement	Private	B2-126
15627600622941	Ross	1.68	1, 2, or 3	Fee Title or Easement	Private	B2-127
15627600624919	Ross	2.16	1, 2, or 3	Fee Title or Easement	Private	B2-128
15627600636028	Ross	4.22	1, 2, or 3	Fee Title or Easement	Private	B2-129
15626500781487	Ross	42.14	1, 2, or 3	Fee Title or Easement	Private	B2-13
15627600638256	Ross	3.56	1, 2, or 3	Fee Title or Easement	Private	B2-130
15627600725546	Ross	31.84	1, 2, or 3	Fee Title or Easement	Private	B2-131
15627600749084	Ross	43.00	1, 2, or 3	Fee Title or Easement	Private	B2-132
15627600759821 C1	Ross	200.80	1, 2, or 3	Fee Title or Easement	Private	B2-133
15627600831065	Ross	5.31	1, 2, or 3	Fee Title or Easement	Private	B2-134
15627600834038	Ross	2.69	1, 2, or 3	Fee Title or Easement	Private	B2-135
15627603023034	Ross	4.12	1, 2, or 3	Fee Title or Easement	Private	B2-136
15626500789932	Ross	18.70	1, 2, or 3	Fee Title or Easement	Private	B2-14
15626500790979	Ross	1.53	1, 2, or 3	Fee Title or Easement	Private	B2-15
15626500792795	Ross	9.17	1, 2, or 3	Fee Title or Easement	Private	B2-16
15626500895233	Ross	23.52	1, 2, or 3	Fee Title or Easement	Private	B2-17
15626500993593	Ross	26.76	1, 2, or 3	Fee Title or Easement	Private	B2-18
15626600109384	Ross	27.71	1, 2, or 3	Fee Title or Easement	Private	B2-19
15626500288103	Ross	50.00	1, 2, or 3	Fee Title or Easement	Private	B2-2
15626600302218	Ross	16.20	1, 2, or 3	Fee Title or Easement	Private	B2-20
15626600318908	Ross	5.60	1, 2, or 3	Fee Title or Easement	Private	B2-21
15626600322486	Ross	32.77	1, 2, or 3	Fee Title or Easement	Private	B2-22
15626600414650	Ross	68.69	1, 2, or 3	Fee Title or Easement	Private	B2-23
15626600446507	Ross	51.13	1, 2, or 3	Fee Title or Easement	Private	B2-24
15626600501893	Ross	5.38	1, 2, or 3	Fee Title or Easement	Private	B2-25

15626600509754	Ross	90.18	1, 2, or 3	Fee Title or Easement	Private	B2-26
15626600534345	Ross	120.54	1, 2, or 3	Fee Title or Easement	Private	B2-27
15626600571086	Ross	83.85	1, 2, or 3	Fee Title or Easement	Private	B2-28
15626600621946	Ross	0.08	1, 2, or 3	Fee Title or Easement	Private	B2-29
15626500296953	Ross	11.29	1, 2, or 3	Fee Title or Easement	Private	B2-3
15626600633664	Ross	6.00	1, 2, or 3	Fee Title or Easement	Private	B2-30
15626600648554	Ross	14.10	1, 2, or 3	Fee Title or Easement	Private	B2-31
15626600653572	Ross	30.83	1, 2, or 3	Fee Title or Easement	Private	B2-32
15626600662914	Ross	43.90	1, 2, or 3	Fee Title or Easement	Private	B2-33
15626600668048	Ross	8.00	1, 2, or 3	Fee Title or Easement	Private	B2-34
15626600673265	Ross	1.10	1, 2, or 3	Fee Title or Easement	Private	B2-35
15626600674325	Ross	1.00	1, 2, or 3	Fee Title or Easement	Private	B2-36
15626600679436	Ross	3.05	1, 2, or 3	Fee Title or Easement	Private	B2-37
15626600704042	Ross	2.00	1, 2, or 3	Fee Title or Easement	Private	B2-38
15626600705169	Ross	2.27	1, 2, or 3	Fee Title or Easement	Private	B2-39
15626500398225	Ross	52.20	1, 2, or 3	Fee Title or Easement	Private	B2-4
15626600709291	Ross	13.80	1, 2, or 3	Fee Title or Easement	Private	B2-40
15626600722025	Ross	40.66	1, 2, or 3	Fee Title or Easement	Private	B2-41
15626600733743	Ross	7.45	1, 2, or 3	Fee Title or Easement	Private	B2-42
15626600737275	Ross	18.97	1, 2, or 3	Fee Title or Easement	Private	B2-43
15626600756003	Ross	50.00	1, 2, or 3	Fee Title or Easement	Private	B2-44
15626600762132	Ross	1.23	1, 2, or 3	Fee Title or Easement	Private	B2-45
15626600762552	Ross	15.79	1, 2, or 3	Fee Title or Easement	Private	B2-46
15626600770727	Ross	3.50	1, 2, or 3	Fee Title or Easement	Private	B2-47
15626600775178	Ross	29.00	1, 2, or 3	Fee Title or Easement	Private	B2-48

15626600806763	Ross	27.00	1, 2, or 3	Fee Title or Easement	Private	B2-49
15626500471460	Ross	89.00	1, 2, or 3	Fee Title or Easement	Private	B2-5
15626600811174	Ross	8.51	1, 2, or 3	Fee Title or Easement	Private	B2-50
15626600852584	Ross	0.79	1, 2, or 3	Fee Title or Easement	Private	B2-51
15626600853604	Ross	0.37	1, 2, or 3	Fee Title or Easement	Private	B2-52
15626600857579	Ross	29.03	1, 2, or 3	Fee Title or Easement	Private	B2-53
15626600861082	Ross	6.60	1, 2, or 3	Fee Title or Easement	Private	B2-54
15626600874781	Ross	6.71	1, 2, or 3	Fee Title or Easement	Private	B2-55
15626600877532	Ross	4.03	1, 2, or 3	Fee Title or Easement	Private	B2-56
15626600880143	Ross	3.59	1, 2, or 3	Fee Title or Easement	Private	B2-57
15626600881454	Ross	1.06	1, 2, or 3	Fee Title or Easement	Private	B2-58
15626600884263	Ross	10.35	1, 2, or 3	Fee Title or Easement	Private	B2-59
15626500496852	Ross	20.20	1, 2, or 3	Fee Title or Easement	Private	B2-6
15626600905937	Ross	25.53	1, 2, or 3	Fee Title or Easement	Private	B2-60
15626600931253	Ross	43.73	1, 2, or 3	Fee Title or Easement	Private	B2-61
15626600935878	Ross	2.95	1, 2, or 3	Fee Title or Easement	Private	B2-62
15626600937259	Ross	3.26	1, 2, or 3	Fee Title or Easement	Private	B2-63
15626600937613	Ross	3.28	1, 2, or 3	Fee Title or Easement	Private	B2-64
15626600939780	Ross	2.62	1, 2, or 3	Fee Title or Easement	Private	B2-65
15626600940642	Ross	26.67	1, 2, or 3	Fee Title or Easement	Private	B2-66
15626600947451	Ross	8.80	1, 2, or 3	Fee Title or Easement	Private	B2-67
15626600955834	Ross	82.00	1, 2, or 3	Fee Title or Easement	Private	B2-68
15626602864399	Ross	0.60	1, 2, or 3	Fee Title or Easement	Private	B2-69
15626500578666	Ross	25.57	1, 2, or 3	Fee Title or Easement	Private	B2-7
15626602876107	Ross	0.73	1, 2, or 3	Fee Title or Easement	Private	B2-70

15626602878125	Ross	0.76	1, 2, or 3	Fee Title or Easement	Private	B2-71
15627600001157	Ross	10.00	1, 2, or 3	Fee Title or Easement	Private	B2-72
15627600010278	Ross	13.97	1, 2, or 3	Fee Title or Easement	Private	B2-73
15627600013488	Ross	11.46	1, 2, or 3	Fee Title or Easement	Private	B2-74
15627600030440	Ross	2.02	1, 2, or 3	Fee Title or Easement	Private	B2-75
15627600032379	Ross	0.14	1, 2, or 3	Fee Title or Easement	Private	B2-76
15627600036884	Ross	26.38	1, 2, or 3	Fee Title or Easement	Private	B2-77
15627600061185	Ross	0.30	1, 2, or 3	Fee Title or Easement	Private	B2-78
15627600063212	Ross	0.30	1, 2, or 3	Fee Title or Easement	Private	B2-79
15626500596468	Ross	1.00	1, 2, or 3	Fee Title or Easement	Private	B2-8
15627600065777	Ross	2.80	1, 2, or 3	Fee Title or Easement	Private	B2-80
15627600067629	Ross	2.30	1, 2, or 3	Fee Title or Easement	Private	B2-81
15627600068610	Ross	2.80	1, 2, or 3	Fee Title or Easement	Private	B2-82
15627600069551	Ross	3.04	1, 2, or 3	Fee Title or Easement	Private	B2-83
15627600077103	Ross	1.50	1, 2, or 3	Fee Title or Easement	Private	B2-84
15627600084086	Ross	69.00	1, 2, or 3	Fee Title or Easement	Private	B2-85
15627600124156	Ross	35.80	1, 2, or 3	Fee Title or Easement	Private	B2-86
15627600156514	Ross	24.33	1, 2, or 3	Fee Title or Easement	Private	B2-87
15627600163321	Ross	20.00	1, 2, or 3	Fee Title or Easement	Private	B2-88
15627600171599	Ross	7.99	1, 2, or 3	Fee Title or Easement	Private	B2-89
15626500673988	Ross	22.21	1, 2, or 3	Fee Title or Easement	Private	B2-9
15627600172365	Ross	2.80	1, 2, or 3	Fee Title or Easement	Private	B2-90
15627600173266	Ross	2.10	1, 2, or 3	Fee Title or Easement	Private	B2-91
15627600178746	Ross	1.83	1, 2, or 3	Fee Title or Easement	Private	B2-92
15627600188282	Ross	83.00	1, 2, or 3	Fee Title or Easement	Private	B2-93

15627600222745	Ross	8.78	1, 2, or 3	Fee Title or Easement	Private	B2-94
15627600225710	Ross	6.46	1, 2, or 3	Fee Title or Easement	Private	B2-95
15627600227724	Ross	6.96	1, 2, or 3	Fee Title or Easement	Private	B2-96
15627600229964	Ross	7.01	1, 2, or 3	Fee Title or Easement	Private	B2-97
15627600230808	Ross	70.26	1, 2, or 3	Fee Title or Easement	Private	B2-98
15627600257052	Ross	44.14	1, 2, or 3	Fee Title or Easement	Private	B2-99
16721900552511	Smithfield	1.40	1, 2, or 3	Fee Title or Easement	Private	E-17
16721900556689	Smithfield	1.80	1, 2, or 3	Fee Title or Easement	Private	E-18
16731000247252	Smithfield	7.25	1, 2, or 3	Fee Title or Easement	Private	E-19
16731000319472	Smithfield	2.98	1, 2, or 3	Fee Title or Easement	Private	E-20
16731000411547	Smithfield	1.26	1, 2, or 3	Fee Title or Easement	Private	E-21
16731000412222	Smithfield	2.67	1, 2, or 3	Fee Title or Easement	Private	E-22
16731000414506	Smithfield	1.09	1, 2, or 3	Fee Title or Easement	Private	E-23
16731000414955	Smithfield	4.53	1, 2, or 3	Fee Title or Easement	Private	E-24
16731000426240	Smithfield	1.00	1, 2, or 3	Fee Title or Easement	Private	E-25
16731000427333	Smithfield	1.00	1, 2, or 3	Fee Title or Easement	Private	E-26
16731000429617	Smithfield	2.53	1, 2, or 3	Fee Title or Easement	Private	E-27
16731000442404	Smithfield	58.28	1, 2, or 3	Fee Title or Easement	Private	E-28
16731000531003	Smithfield	0.75	1, 2, or 3	Fee Title or Easement	Private	E-29
16731000548256	Smithfield	4.53	1, 2, or 3	Fee Title or Easement	Private	E-30
16731000548754	Smithfield	1.17	1, 2, or 3	Fee Title or Easement	Private	E-31
16731000548993	Smithfield	1.00	1, 2, or 3	Fee Title or Easement	Private	E-32
16731000555514	Smithfield	33.74	1, 2, or 3	Fee Title or Easement	Private	E-33
16731000559097	Smithfield	1.02	1, 2, or 3	Fee Title or Easement	Private	E-34
16731000641538	Smithfield	1.08	1, 2, or 3	Fee Title or Easement	Private	E-35

16731000642704	Smithfield	1.15	1, 2, or 3	Fee Title or Easement	Private	E-36
16731000642886	Smithfield	1.16	1, 2, or 3	Fee Title or Easement	Private	E-37
16731000646042	Smithfield	2.50	1, 2, or 3	Fee Title or Easement	Private	E-38
16731000646935	Smithfield	2.64	1, 2, or 3	Fee Title or Easement	Private	E-39
16731000651109	Smithfield	1.23	1, 2, or 3	Fee Title or Easement	Private	E-40
16731000651362	Smithfield	1.02	1, 2, or 3	Fee Title or Easement	Private	E-41
16731000651456	Smithfield	1.04	1, 2, or 3	Fee Title or Easement	Private	E-42
16731000653041	Smithfield	1.22	1, 2, or 3	Fee Title or Easement	Private	E-43
16731000654172	Smithfield	1.10	1, 2, or 3	Fee Title or Easement	Private	E-44
16731000654500	Smithfield	1.06	1, 2, or 3	Fee Title or Easement	Private	E-45
16731000655247	Smithfield	1.62	1, 2, or 3	Fee Title or Easement	Private	E-46
16731000656564	Smithfield	2.35	1, 2, or 3	Fee Title or Easement	Private	E-47
16731000659828	Smithfield	1.58	1, 2, or 3	Fee Title or Easement	Private	E-48
16731000750465	Smithfield	3.57	1, 2, or 3	Fee Title or Easement	Private	E-49
16731000751735	Smithfield	1.27	1, 2, or 3	Fee Title or Easement	Private	E-50
16731000755147	Smithfield	106.14	1, 2, or 3	Fee Title or Easement	Private	E-51
16731001350002	Smithfield	5.65	1, 2, or 3	Fee Title or Easement	Private	E-52
16731001357098	Smithfield	3.20	1, 2, or 3	Fee Title or Easement	Private	E-53
16731001452300	Smithfield	0.70	1, 2, or 3	Fee Title or Easement	Private	E-54
16731001453887	Smithfield	0.27	1, 2, or 3	Fee Title or Easement	Private	E-55
16731001455792	Smithfield	2.75	1, 2, or 3	Fee Title or Easement	Private	E-56
16731001456501	Smithfield	3.05	1, 2, or 3	Fee Title or Easement	Private	E-57
16731001465032	Smithfield	0.35	1, 2, or 3	Fee Title or Easement	Private	E-58
16731001466304	Smithfield	9.48	1, 2, or 3	Fee Title or Easement	Private	E-59
16731001469397	Smithfield	0.41	1, 2, or 3	Fee Title or Easement	Private	E-60

16731001469813	Smithfield	2.35	1, 2, or 3	Fee Title or Easement	Private	E-61
16731002562751	Smithfield	4.56	1, 2, or 3	Fee Title or Easement	Private	E-62
16731002571106	Smithfield	6.97	1, 2, or 3	Fee Title or Easement	Private	E-63
16731002663236	Smithfield	21.78	1, 2, or 3	Fee Title or Easement	Private	E-64
16731002669440	Smithfield	5.70	1, 2, or 3	Fee Title or Easement	Private	E-65
16731002671242	Smithfield	14.27	1, 2, or 3	Fee Title or Easement	Private	E-66
16731002678291	Smithfield	3.59	1, 2, or 3	Fee Title or Easement	Private	E-67
16731002762776	Smithfield	4.25	1, 2, or 3	Fee Title or Easement	Private	E-68
16731002771180	Smithfield	0.99	1, 2, or 3	Fee Title or Easement	Private	E-69
16731003426943	Smithfield	4.40	1, 2, or 3	Fee Title or Easement	Private	E-70
16731003436487	Smithfield	10.09	1, 2, or 3	Fee Title or Easement	Private	E-71
16731003438295	Smithfield	0.51	1, 2, or 3	Fee Title or Easement	Private	E-72
16731003438950	Smithfield	3.70	1, 2, or 3	Fee Title or Easement	Private	E-73
16731004530198	Smithfield	0.66	1, 2, or 3	Fee Title or Easement	Private	E-74
16731004530338	Smithfield	0.25	1, 2, or 3	Fee Title or Easement	Private	E-75
16731004532312	Smithfield	0.37	1, 2, or 3	Fee Title or Easement	Private	E-76
16731004532500	Smithfield	0.39	1, 2, or 3	Fee Title or Easement	Private	E-77
16731004533423	Smithfield	0.38	1, 2, or 3	Fee Title or Easement	Private	E-78
16731004533525	Smithfield	0.21	1, 2, or 3	Fee Title or Easement	Private	E-79
16731004534506	Smithfield	0.14	1, 2, or 3	Fee Title or Easement	Private	E-80
16731004542020	Smithfield	5.50	1, 2, or 3	Fee Title or Easement	Private	E-81
16731004542454	Smithfield	1.53	1, 2, or 3	Fee Title or Easement	Private	E-82
16731004544149	Smithfield	1.36	1, 2, or 3	Fee Title or Easement	Private	E-83
16731004544373	Smithfield	1.33	1, 2, or 3	Fee Title or Easement	Private	E-84
16731004545417	Smithfield	1.18	1, 2, or 3	Fee Title or Easement	Private	E-85

17629900470932	Stroud	1.12	1, 2, or 3	Fee Title or Easement	Private	D-1
17629900583108	Stroud	35.25	1, 2, or 3	Fee Title or Easement	Private	D-10
17720900458610	Stroud	7.04	1, 2, or 3	Fee Title or Easement	Private	D-100
17720900459482	Stroud	1.20	1, 2, or 3	Fee Title or Easement	Private	D-101
17720900472150	Stroud	94.98	1, 2, or 3	Fee Title or Easement	Private	D-102
17720900478916	Stroud	2.80	1, 2, or 3	Fee Title or Easement	Private	D-103
17720900486602	Stroud	3.20	1, 2, or 3	Fee Title or Easement	Private	D-104
17720900510603	Stroud	15.00	1, 2, or 3	Fee Title or Easement	Private	D-105
17720900514570	Stroud	12.04	1, 2, or 3	Fee Title or Easement	Private	D-106
17720900518416	Stroud	3.26	1, 2, or 3	Fee Title or Easement	Private	D-107
17720900520754	Stroud	6.69	1, 2, or 3	Fee Title or Easement	Private	D-108
17720900525165	Stroud	6.04	1, 2, or 3	Fee Title or Easement	Private	D-109
17629900636052	Stroud	10.60	1, 2, or 3	Fee Title or Easement	Private	D-11
17720900527173	Stroud	4.05	1, 2, or 3	Fee Title or Easement	Private	D-110
17720900529684	Stroud	36.62	1, 2, or 3	Fee Title or Easement	Private	D-111
17720900530757	Stroud	0.90	1, 2, or 3	Fee Title or Easement	Private	D-112
17720900552722	Stroud	4.45	1, 2, or 3	Fee Title or Easement	Private	D-113
17720900556002	Stroud	18.90	1, 2, or 3	Fee Title or Easement	Private	D-114
17720900561611	Stroud	3.40	1, 2, or 3	Fee Title or Easement	Private	D-115
17720900561951	Stroud	1.00	1, 2, or 3	Fee Title or Easement	Private	D-116
17720900567613	Stroud	49.11	1, 2, or 3	Fee Title or Easement	Private	D-117
17720900570420	Stroud	1.00	1, 2, or 3	Fee Title or Easement	Private	D-118
17720900572028	Stroud	1.60	1, 2, or 3	Fee Title or Easement	Private	D-119
17629900640716	Stroud	44.00	1, 2, or 3	Fee Title or Easement	Private	D-12
17720900586358	Stroud	76.46	1, 2, or 3	Fee Title or Easement	Private	D-120

17720900590344	Stroud	2.27	1, 2, or 3	Fee Title or Easement	Private	D-121
17720900592810	Stroud	4.21	1, 2, or 3	Fee Title or Easement	Private	D-122
17720900595759	Stroud	7.16	1, 2, or 3	Fee Title or Easement	Private	D-123
17720900615588	Stroud	3.31	1, 2, or 3	Fee Title or Easement	Private	D-124
17720900623281	Stroud	6.00	1, 2, or 3	Fee Title or Easement	Private	D-125
17720900646027	Stroud	73.48	1, 2, or 3	Fee Title or Easement	Private	D-126
17720900653131	Stroud	22.83	1, 2, or 3	Fee Title or Easement	Private	D-127
17720900657286	Stroud	7.18	1, 2, or 3	Fee Title or Easement	Private	D-128
17720900662284	Stroud	3.00	1, 2, or 3	Fee Title or Easement	Private	D-129
17629900647971	Stroud	10.07	1, 2, or 3	Fee Title or Easement	Private	D-13
17720900665397	Stroud	13.87	1, 2, or 3	Fee Title or Easement	Private	D-130
17720900691646	Stroud	2.10	1, 2, or 3	Fee Title or Easement	Private	D-131
17720900691918	Stroud	2.50	1, 2, or 3	Fee Title or Easement	Private	D-132
17720900722077	Stroud	2.61	1, 2, or 3	Fee Title or Easement	Private	D-133
17720900728123	Stroud	21.20	1, 2, or 3	Fee Title or Easement	Private	D-134
17720900739219	Stroud	46.21	1, 2, or 3	Fee Title or Easement	Private	D-135
17720900750490	Stroud	13.82	1, 2, or 3	Fee Title or Easement	Private	D-136
17720900752974	Stroud	2.85	1, 2, or 3	Fee Title or Easement	Private	D-137
17720900757643	Stroud	16.86	1, 2, or 3	Fee Title or Easement	Private	D-138
17720900760226	Stroud	0.13	1, 2, or 3	Fee Title or Easement	Private	D-139
17629900668970	Stroud	18.83	1, 2, or 3	Fee Title or Easement	Private	D-14
17720900760598	Stroud	6.20	1, 2, or 3	Fee Title or Easement	Private	D-140
17720900762938	Stroud	2.80	1, 2, or 3	Fee Title or Easement	Private	D-141
17720900765938	Stroud	4.80	1, 2, or 3	Fee Title or Easement	Private	D-142
17720900778272	Stroud	7.30	1, 2, or 3	Fee Title or Easement	Private	D-143

17720900789823	Stroud	120.00	1, 2, or 3	Fee Title or Easement	Private	D-144
17720900810881	Stroud	13.09	1, 2, or 3	Fee Title or Easement	Private	D-145
17720900843778	Stroud	23.30	1, 2, or 3	Fee Title or Easement	Private	D-146
17720900853831	Stroud	21.00	1, 2, or 3	Fee Title or Easement	Private	D-147
17720900865973	Stroud	4.70	1, 2, or 3	Fee Title or Easement	Private	D-148
17720900871482	Stroud	2.45	1, 2, or 3	Fee Title or Easement	Private	D-149
17629900672282	Stroud	12.60	1, 2, or 3	Fee Title or Easement	Private	D-15
17720900920455	Stroud	6.38	1, 2, or 3	Fee Title or Easement	Private	D-150
17720900944045	Stroud	44.70	1, 2, or 3	Fee Title or Easement	Private	D-151
17720900964141	Stroud	78.68	1, 2, or 3	Fee Title or Easement	Private	D-152
17720900969870	Stroud	11.49	1, 2, or 3	Fee Title or Easement	Private	D-153
17720900981276	Stroud	25.10	1, 2, or 3	Fee Title or Easement	Private	D-154
17720900988886	Stroud	2.81	1, 2, or 3	Fee Title or Easement	Private	D-155
17720900994184	Stroud	4.30	1, 2, or 3	Fee Title or Easement	Private	D-156
17720900994959	Stroud	31.00	1, 2, or 3	Fee Title or Easement	Private	D-157
17720900997377	Stroud	2.90	1, 2, or 3	Fee Title or Easement	Private	D-158
17720901297890	Stroud	4.44	1, 2, or 3	Fee Title or Easement	Private	D-159
17629900673843	Stroud	7.24	1, 2, or 3	Fee Title or Easement	Private	D-16
17720901390624	Stroud	2.72	1, 2, or 3	Fee Title or Easement	Private	D-160
17720901393666	Stroud	3.22	1, 2, or 3	Fee Title or Easement	Private	D-161
17721900068136	Stroud	58.66	1, 2, or 3	Fee Title or Easement	Private	D-162
17721900080847	Stroud	2.53	1, 2, or 3	Fee Title or Easement	Private	D-163
17721900098560	Stroud	11.00	1, 2, or 3	Fee Title or Easement	Private	D-164
17721900169894	Stroud	18.00	1, 2, or 3	Fee Title or Easement	Private	D-165
17721900170360	Stroud	113.50	1, 2, or 3	Fee Title or Easement	Private	D-166

17721900188878	Stroud	15.30	1, 2, or 3	Fee Title or Easement	Private	D-167
17721900192635	Stroud	2.64	1, 2, or 3	Fee Title or Easement	Private	D-168
17721900197705	Stroud	3.27	1, 2, or 3	Fee Title or Easement	Private	D-169
17629900682595	Stroud	14.83	1, 2, or 3	Fee Title or Easement	Private	D-17
17721900265108	Stroud	9.59	1, 2, or 3	Fee Title or Easement	Private	D-170
17721900275879	Stroud	39.86	1, 2, or 3	Fee Title or Easement	Private	D-171
17721900363715	Stroud	21.86	1, 2, or 3	Fee Title or Easement	Private	D-172
17721900369638	Stroud	4.38	1, 2, or 3	Fee Title or Easement	Private	D-173
17721900372500	Stroud	1.97	1, 2, or 3	Fee Title or Easement	Private	D-174
17721900373530	Stroud	0.18	1, 2, or 3	Fee Title or Easement	Private	D-175
17721900376267	Stroud	4.10	1, 2, or 3	Fee Title or Easement	Private	D-176
17730000109036	Stroud	12.14	1, 2, or 3	Fee Title or Easement	Private	D-177
17730000207269	Stroud	3.05	1, 2, or 3	Fee Title or Easement	Private	D-178
17730000216350	Stroud	194.00	1, 2, or 3	Fee Title or Easement	Private	D-179
17629900730255	Stroud	4.08	1, 2, or 3	Fee Title or Easement	Private	D-18
17730000300483	Stroud	0.00	1, 2, or 3	Fee Title or Easement	Private	D-180
17730000303711	Stroud	9.60	1, 2, or 3	Fee Title or Easement	Private	D-181
17730000308200	Stroud	17.00	1, 2, or 3	Fee Title or Easement	Private	D-182
17730000405046	Stroud	5.90	1, 2, or 3	Fee Title or Easement	Private	D-183
17730000420213	Stroud	2.91	1, 2, or 3	Fee Title or Easement	Private	D-184
17730000422207	Stroud	7.09	1, 2, or 3	Fee Title or Easement	Private	D-185
17730000423447	Stroud	12.40	1, 2, or 3	Fee Title or Easement	Private	D-186
17730000507634	Stroud	72.74	1, 2, or 3	Fee Title or Easement	Private	D-187
17730000602954	Stroud	0.32	1, 2, or 3	Fee Title or Easement	Private	D-188
17730000603275	Stroud	0.95	1, 2, or 3	Fee Title or Easement	Private	D-189

17629900732352	Stroud	3.53	1, 2, or 3	Fee Title or Easement	Private	D-19
17730000604505	Stroud	2.70	1, 2, or 3	Fee Title or Easement	Private	D-190
17730000606184	Stroud	27.50	1, 2, or 3	Fee Title or Easement	Private	D-191
17730000611934	Stroud	6.15	1, 2, or 3	Fee Title or Easement	Private	D-192
17730000614303	Stroud	6.50	1, 2, or 3	Fee Title or Easement	Private	D-193
17730000621304	Stroud	5.73	1, 2, or 3	Fee Title or Easement	Private	D-194
17730000625595	Stroud	1.98	1, 2, or 3	Fee Title or Easement	Private	D-195
17730000628208	Stroud	2.39	1, 2, or 3	Fee Title or Easement	Private	D-196
17730000707117	Stroud	10.79	1, 2, or 3	Fee Title or Easement	Private	D-197
17730000707998	Stroud	19.60	1, 2, or 3	Fee Title or Easement	Private	D-198
17730000713064	Stroud	16.78	1, 2, or 3	Fee Title or Easement	Private	D-199
17629900475440	Stroud	6.00	1, 2, or 3	Fee Title or Easement	Private	D-2
17629900734440	Stroud	3.58	1, 2, or 3	Fee Title or Easement	Private	D-20
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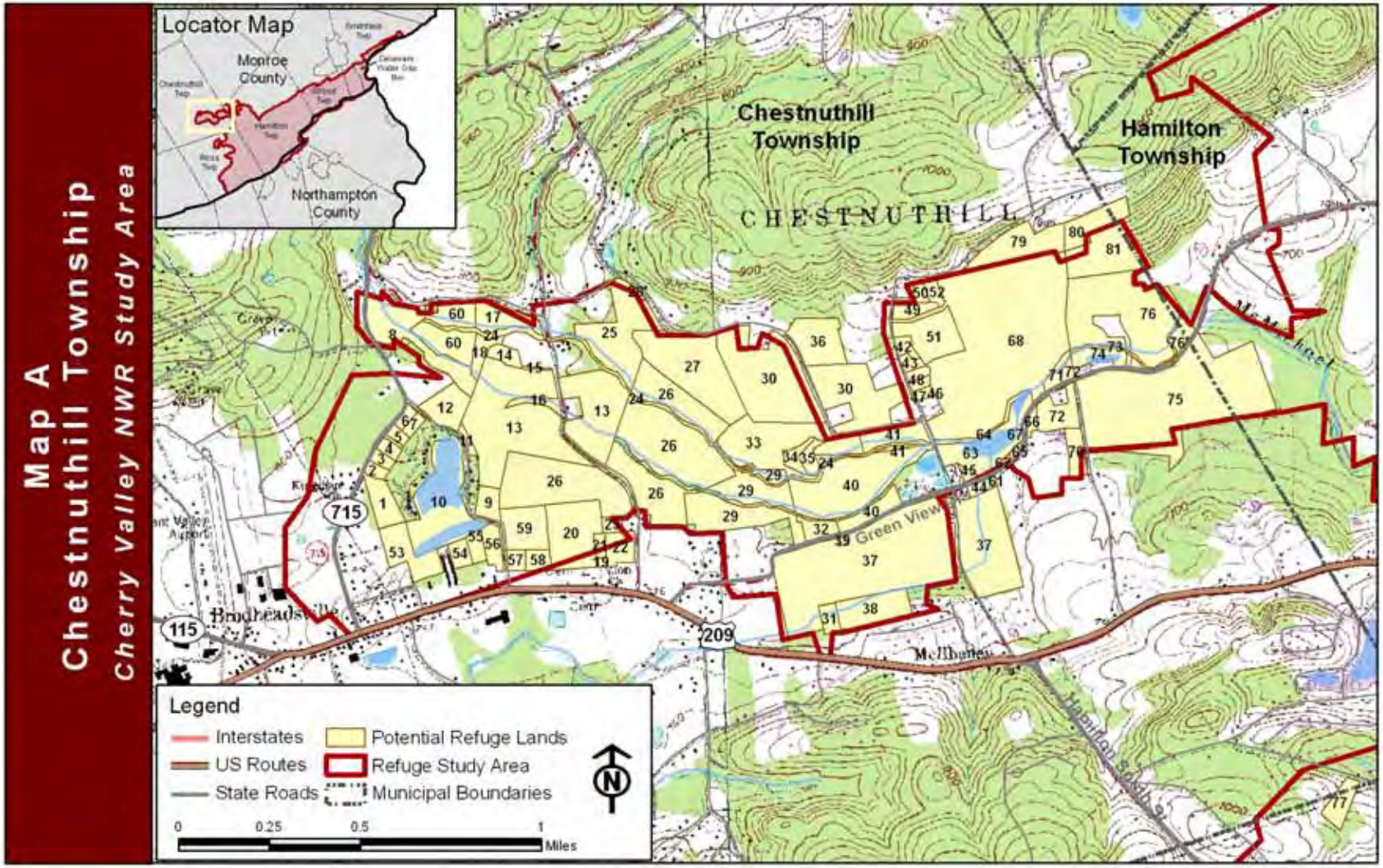
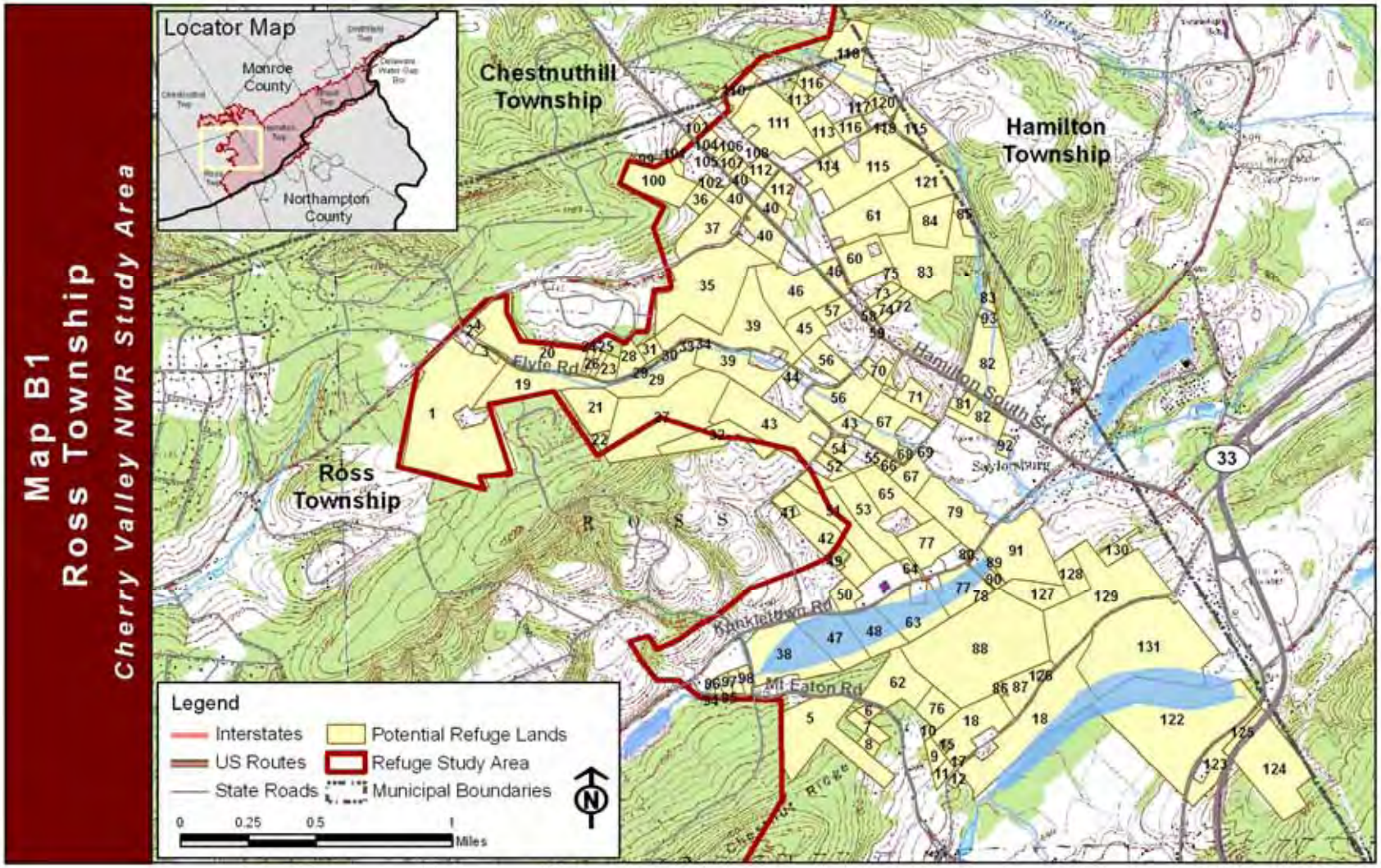
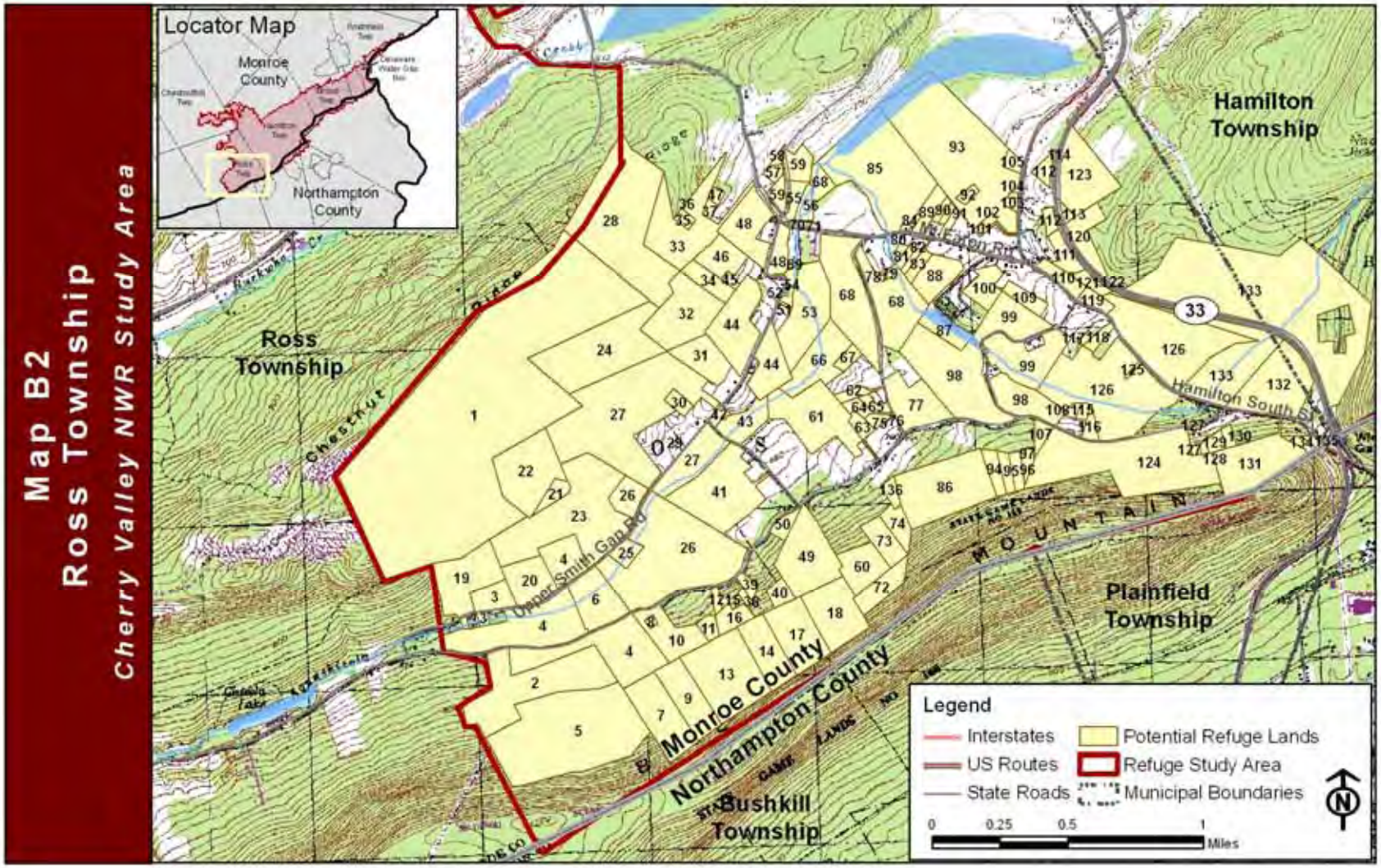


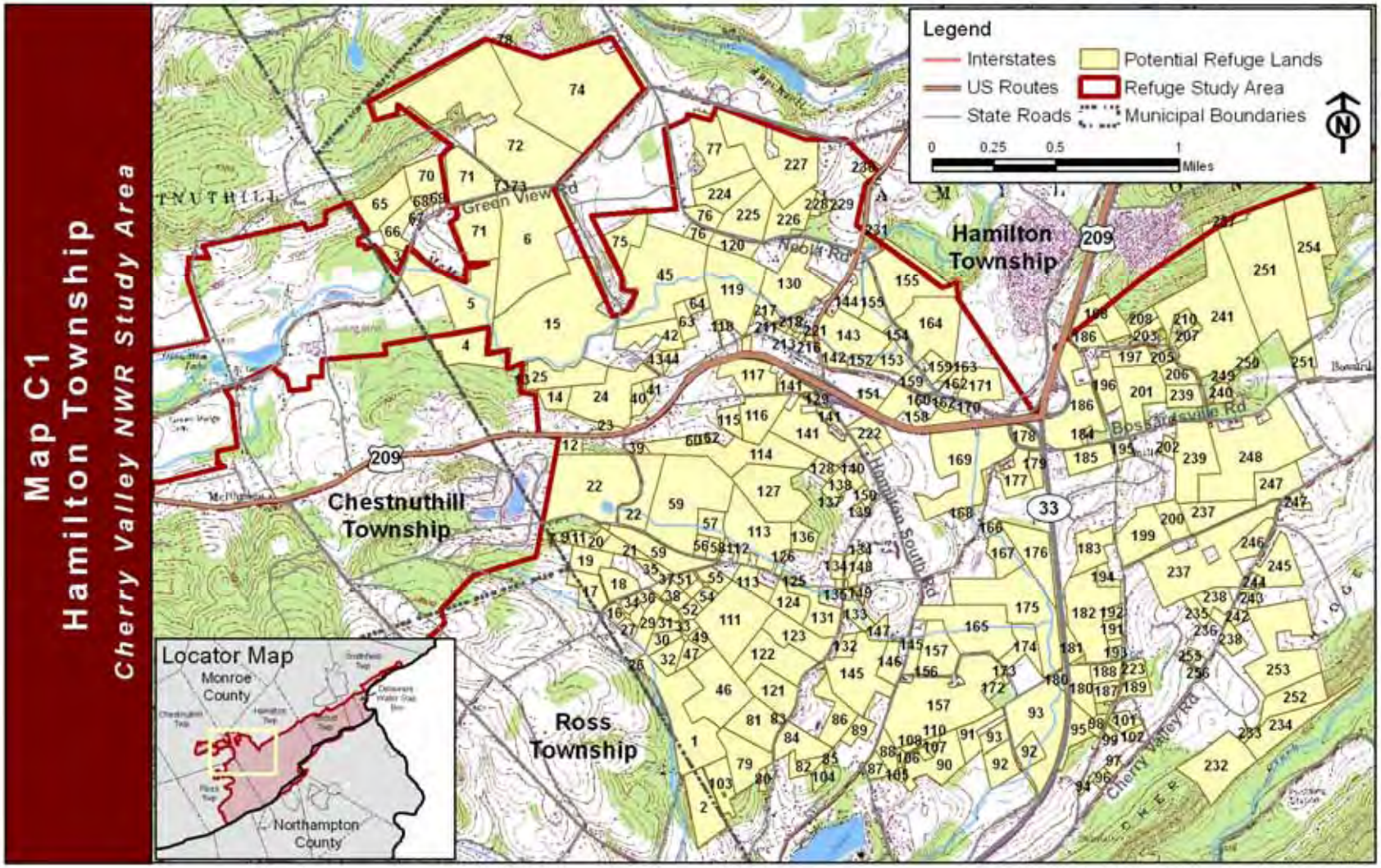
Map A. Parcels (or portions of parcels) within Chestnuthill Township that might be considered for inclusion in a potential National Wildlife Refuge in Cherry Valley, Monroe County, Pennsylvania.



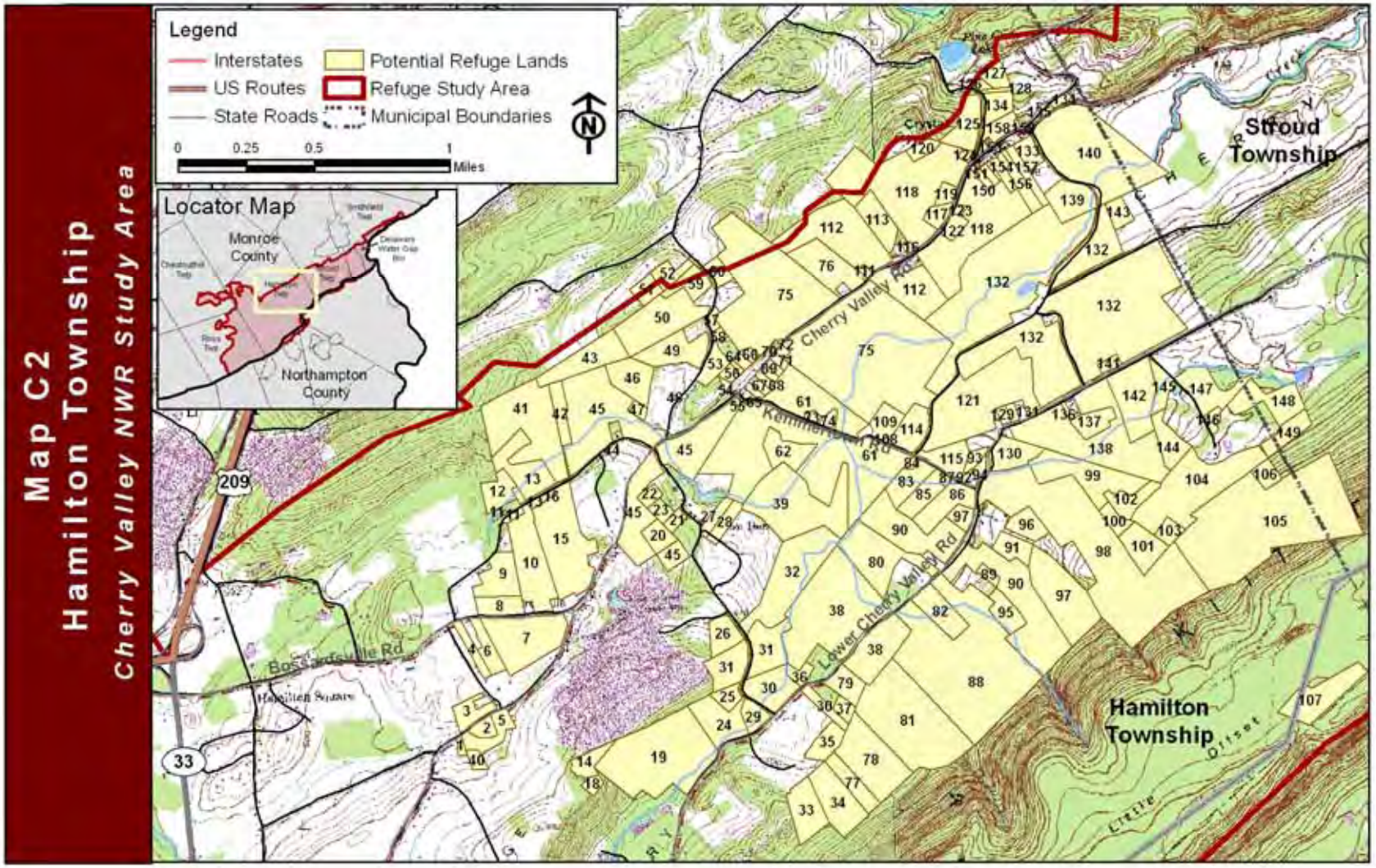
Map B - 1. Parcels (or portions of parcels) within Ross Township that might be considered for inclusion in a potential National Wildlife Refuge in Cherry Valley, Monroe County, Pennsylvania.



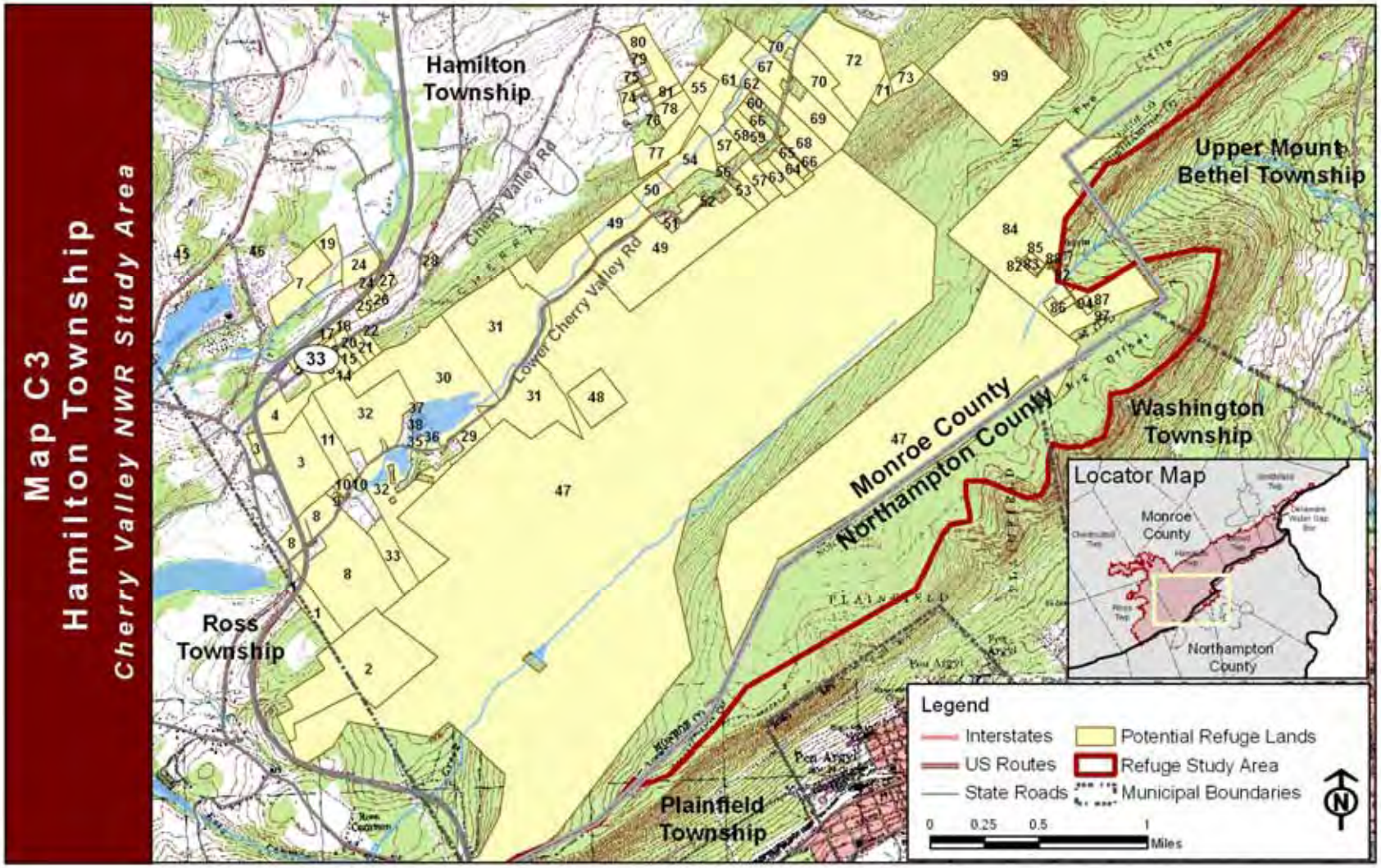
Map B-2. Parcels (or portions of parcels) within Ross Township that might be considered for inclusion in a potential National Wildlife Refuge in Cherry Valley, Monroe County, Pennsylvania.



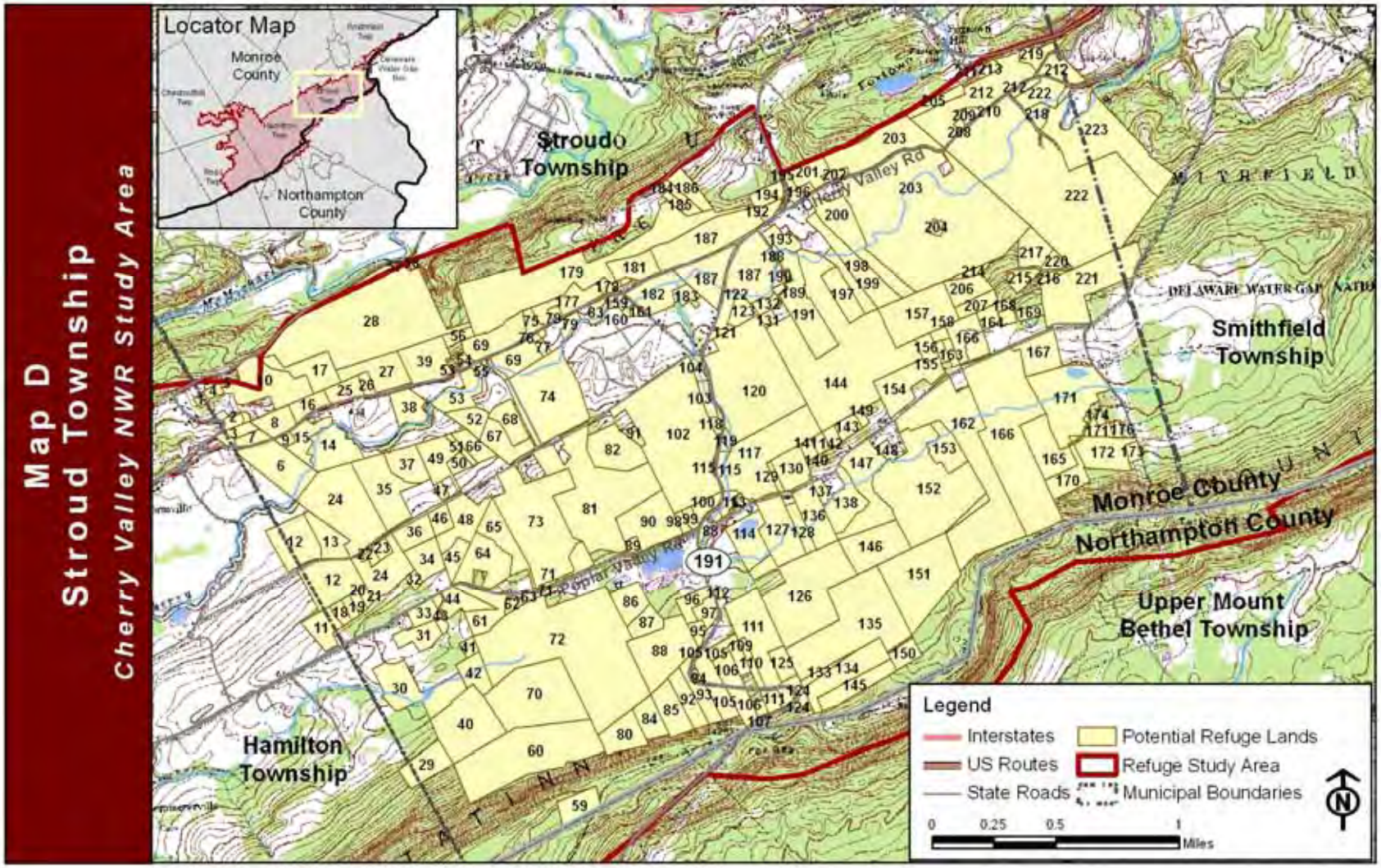
Map C -1. Parcels (or portions of parcels) within Hamilton Township that might be considered for inclusion in a potential National Wildlife Refuge in Cherry Valley, Monroe County, Pennsylvania.



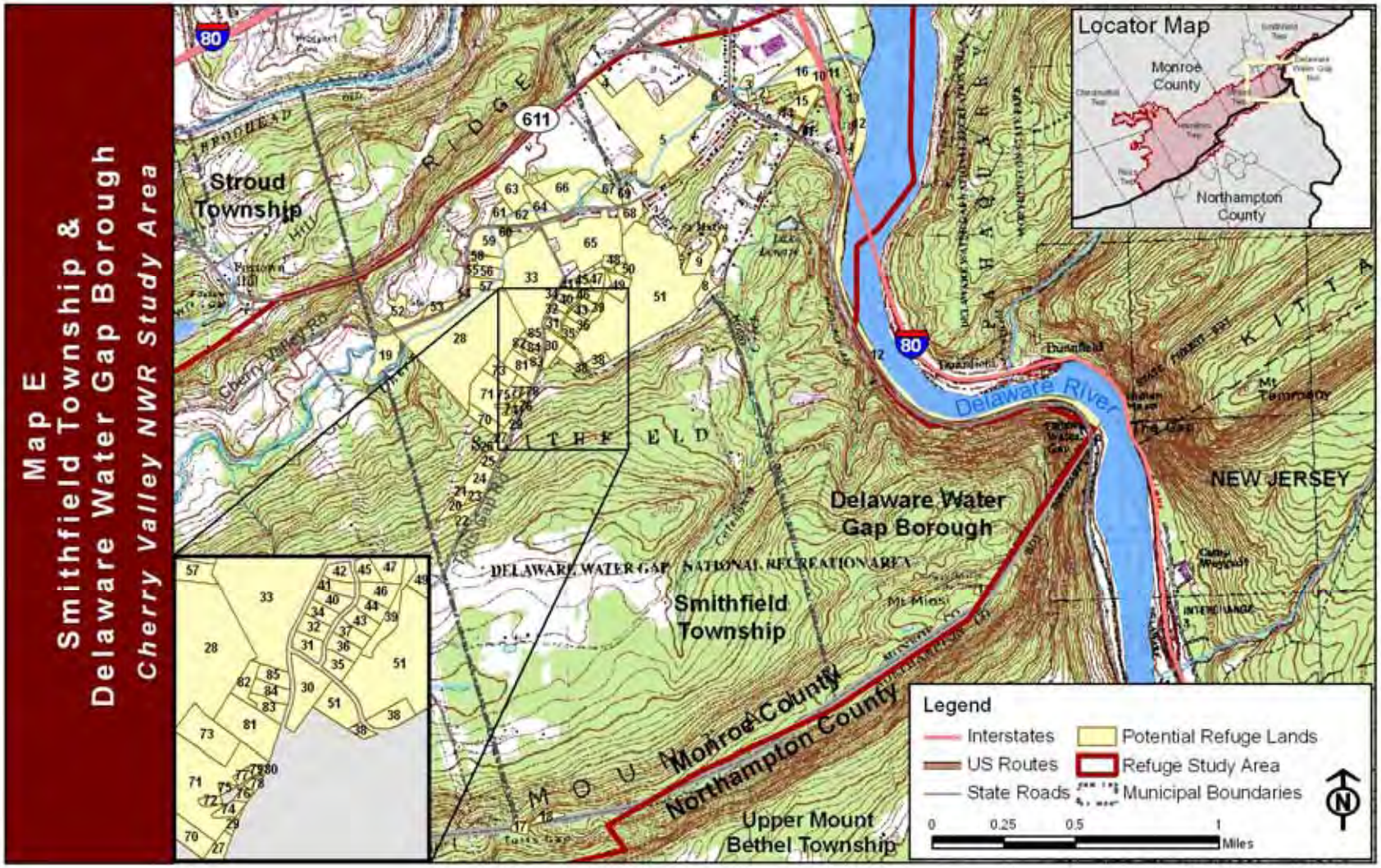
Map C -2. Parcels (or portions of parcels) within Hamilton Township that might be considered for inclusion in a potential National Wildlife Refuge in Cherry Valley, Monroe County, Pennsylvania.



Map C -3. Parcels (or portions of parcels) within Hamilton Township that might be considered for inclusion in a potential National Wildlife Refuge in Cherry Valley, Monroe County, Pennsylvania.



Map D. Parcels (or portions of parcels) within Stroud Township that might be considered for inclusion in a potential National Wildlife Refuge in Cherry Valley, Monroe County, Pennsylvania.



Map E. Parcels (or portions of parcels) within Smithfield Township that might be considered for inclusion in a potential National Wildlife Refuge in Cherry Valley, Monroe County, Pennsylvania.

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U.S. Fish and Wildlife Service. 2007. Indiana Bat (*Myotis sodalis*) Draft Recovery Plan: First Revision. Fort Snelling, Minnesota. 260 pp.

Appendix F

FINAL
Realty Feasibility Study for a Proposed Cherry Valley National Wildlife Refuge Pennsylvania

Prepared by:

Division of Realty
U.S. Fish and Wildlife Service
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Hadley, Massachusetts 01035

December 2008

DISCLAIMER

The following document comprises a theoretical manipulation of data for the sole purpose of demonstrating how the data can be used and interpreted. IT IS NOT AN APPRAISAL, AN APPRAISAL REPORT, OR A CONSULTATION REPORT. Any results or conclusions drawn from the data are for purposes of illustration only and are not to be utilized for any other purpose.

Separation of this Disclaimer from this document makes invalid the entire document.

Introduction

In 2006, the 109th Congress passed the Cherry Valley National Wildlife Refuge Study Act (Study Act) which directed the U.S. Fish and Wildlife Service (Service) to evaluate the valley's fish and wildlife habitats for their potential inclusion through donation, exchange, or willing seller purchase, in a future Cherry Valley National Wildlife Refuge and to submit a report containing the results of the evaluation.

One element of this report is to be a map that identifies specific lands and waters and that delineates an acquisition boundary for a potential Cherry Valley National Wildlife Refuge.

A second element is to be a cost estimate for the acquisition of all lands, waters, and interests therein that are appropriate for refuge status.

The purpose of this realty feasibility study is to provide a broad, theoretical estimate of the cost to acquire all lands, waters, and interests that have been deemed appropriate for refuge status within the study boundary as it is defined in the Study Act.

While real property interests can be acquired by the Service through donations and exchanges, purchases from willing sellers are the most commonly used method. A property's interests can be acquired "in fee" whereby all interests, formally known as the fee simple estate, are conveyed. Alternatively, a portion of the rights or interests associated with a property can be acquired. Specific rights can be reserved by the seller or specific rights can be acquired by the Service. A conservation easement is the means most commonly used by the Service to ensure protection of a property while not acquiring it in fee. Conservation easements typically allow the Service to purchase the rights of development, timbering, mining and hunting.

Methodology

The Cherry Valley Study Team (CVST), a group comprised of representatives of the Service, The Nature Conservancy, and other interested parties, was convened to develop the most suitable alternatives for accomplishing the conservation benefits to be gained from the establishment of a Cherry Valley National Wildlife Refuge. The Service subsequently determined that the preferred action for achieving these benefits was Alternative B – Diverse Habitat Complex.

After the initial analyses were completed for this document, the CVST realized that approximately 1,500 acres along lower Cherry Creek had likely been inadvertently excluded from the Study Act boundary. Consequently, this section was included in the analyses presented in the main document and, where possible, other appendices. Of the additional 1,500 acres, the Service identified approximately 700 acres that were

appropriate for inclusion in a refuge and these were added to the original 19,723 acres proposed under Alternative B. Unfortunately, the analyses for this document had already been completed; therefore, the additional acres have not been incorporated into this document. Overall, these acres represent less than four percent of the proposed refuge area.

Alternative B envisions a total of 20,466 acres of potential refuge lands, well within the Study Act's requirement that "[t]he total area of lands, water and interests therein that may be acquired shall not in the aggregate exceed 30,000 acres." However, as explained above, approximately 700 acres from the Lower Cherry Creek section have not been included in these analyses.

Alternative B seeks to protect the optimal amount of desired habitat and biological communities while excluding, to the greatest extent reasonable, properties or portions of properties that have already been developed or have substantial structures on them. While the protection of unimproved land is the highest priority of any refuge land acquisition program, there are inevitably situations where the acquisition of an improvement (only from a willing seller) is necessary for habitat protection purposes. The location and value of such improvements cannot be predicted; therefore, the value of such improvements have not been included in the results of this study.

Identification of appropriate properties or portions of properties most appropriate for inclusion in a proposed refuge was done through personal inspection of lands within the Cherry Valley National Wildlife Refuge Study Act boundary, and through the use of a series of maps constructed by Monroe County Planning Commission (MCPC) personnel that utilized Pennsylvania Department of Conservation and Natural Resources PAMAP Program 2005 color orthophotos of the area with a parcel overlay.

Maps delineating areas proposed for inclusion in any future refuge, as well as areas to be excluded, were created using the orthophoto base. Individual parcels were mapped using MCPC-assigned General Land Use Descriptions as well as owner names, block and lot numbers, and calculated acreages.

A database of all properties within the Study Act boundary was modified to reflect only those parcels recommended for inclusion in the proposed refuge. Within this modified database, properties were sorted by MCPC General Land Use Descriptions, hereafter referred to as general land use categories, and then by the more specific Monroe County Assessor's Land Use Codes. Sale Price to Assessed Value ratios were calculated for each group of sales in each general land use category, utilizing all sales where the ratio was greater than 1.0. Assessed values for the categories of land and of buildings came from the most recent reassessment done by Monroe County in 1988. These ratios were then applied to the land component only, of those properties within the same general land use category that had sale prices less than their assessed values. The vast majority of these transactions were for unspecified amounts, for no monetary

consideration, or for one dollar. In this way, the values of the land components for known sales were estimated.

Total sale prices for each general land use category, both those calculated directly and those calculated through application of the ratios, were then adjusted to reflect the proportion of the property proposed for inclusion in the refuge. These weighted subtotals for calculated and estimated costs were then averaged and per acre costs calculated.

Sales within the Residential general land use categories were broken into subclasses based on size (less than ten acres and ten acres and greater), with ratios calculated for each subclass. Sales in the Vacant general land use categories were broken into subclasses based on sales price, as acreage was not strongly correlated with sale price.

There are only nine parcels proposed for inclusion in a future refuge that are larger than 150 acres. As the number of transfers of these properties was insufficient for analysis, sales of large acreage properties outside the Study Act boundary, but within Monroe County, were used to estimate the per acre cost of these tracts. Given the average size of the parcels to be included (647 acres), the two sales closest in size were utilized to calculate an interpolated per acre value.

The area within the proposed refuge includes 300 acres already subject to conservation easements and 1,047 acres subject to agricultural easements. The conservation easements were typically acquired by non-governmental conservation organizations or by townships and the agricultural easements were purchased by Monroe County. The lands subject to agricultural easements are different from those subject to Pennsylvania's Act 319 restrictions, which act essentially as a seven year easement on properties, but one which permits very limited (one two acre lot per year) development.

As the Service will likely address the protection of properties already subject to easements, on an individual property basis and over an extended period, for the purposes of this study these lands will be treated as lands that will be protected through acquisition.

To estimate the cost of protecting lands through the purchase of conservation easements, an analysis was done on all known easements in the proposed refuge area, for which the market values of the property both before and after application of the easements were available. An analysis of the data resulted in a calculated mean value of easements of 66% of the unencumbered value of the property. This percentage, when applied to the per acre fee values for each general land use class produced a per acre value for easements on each land use class. That value, when multiplied by half of the number of acres in each class (i.e. the number to be protected through easements) resulted in a cost of protecting half that land use class' acres through easements.

Results and Discussion

While analysis of the data produced a range of sale price to assessed value ratios, for the most significant general land use categories, including those for agriculture, forests, and residential use, the range was from 4.0 to 5.5. The residential category that comprises mobile homes, courts, and parks, as well as garages, sheds, etc., ranged higher, from 6.25 to 7.25, as did the categories for services and retail trade. The highest ratio, 10.3, was for the general land use category of Vacant, Undeveloped and Unused Land Area, reflecting the higher value of land available for residential development. Lot sizes of the sales indicate that the vast majority of these parcels are suitable for only one residence.

Not unexpectedly, estimated per acre prices varied widely by general land use category. While the relatively low value for excess acreage from large residential lots was predictable, that for excess industrial acreage appears to reflect the high proportion of property value that lies in improvements. Agricultural and forested properties subject to Pennsylvania's Act 319 fell in the middle of the range of per acre values.

A summary of a broad analysis of the data is shown in Table 1 and Table 2. Table 1 shows, by General Land Use Description, the number of acres identified for inclusion in the proposed refuge and the estimated costs, per acre and total, for each land use category, if all lands were to be acquired in fee.

Table 2 shows the number of acres and per acre cost, by general land use categories, if half of the area to be included in the proposed refuge was to be protected through fee purchase and the other half was to be protected through the purchase of conservation easements (Alternative B). In regard to the interests to be acquired through easements, the focus group determined that to accomplish the goals of the proposed refuge, acquisition of the development rights, timber, mining (surface and subsurface), and hunting associated with any given property is essential. Water rights and life use are interests, the reservation of which could be negotiated.

Not included in these summary tables but crucial nonetheless, are the significant and unavoidable costs associated with land acquisition. The cost of appraisals, surveys, contaminant inspections, as well as essential travel costs, can add appreciably to the cost of each acquisition, be it of a fee or an easement interest.

Table 1. Protection of Lands in a Proposed Cherry Valley NWR Through Acquisition of Fee Interests Only

General Land Use Description	Land Use Codes	Total assessed acres	Proposed refuge (acres)	Est. Cost / Fee Acre	Est. Cost
Agriculture	Agricultural Reserve - Act 319	1,812	1,633	$3,583	$5,850,847
Agriculture	Agriculture - Act 319	4,253	3,432	$3,001	$10,229,265
Forest	Forest Reserve - Act 319	4,909	4,321	$3,013	$13,020,295
Communication/ Transportation/ Utilities	Undeveloped & Unused	39	39	$4,984	$194,380
Communication/ Transportation/Utilities	Tracts > 150 acs.	5,703	3,885	$4,035	$15,675,975
Industrial	Various	440	374	$2,554	$955,305
Cultural, Public/Private Parks & Rec.	Undeveloped & Unused, etc.	359	340	$3,073	$1,044,743
Residential	Household Units < 10 acs.	1,654	989	$7,908	$7,820,946
Residential	Household Units > 10 acs.	1,940	1,812	$2,607	$4,724,331
Residential	Mobile home courts, garages, etc.	363	308	$5,262	$1,620,642
Residential	Developments, apts., timeshare, etc.	345	220	$8,879	$1,953,354
Hotels	Transient lodging	50	20	$11,303	$226,061
Services, resorts, group camps	Retail, professional, F.I.R.E.	323	304	$13,878	$4,218,805
Vacant	Undeveloped & Unused - low	1,170	1,048	$6,590	$6,905,996
Vacant	Undeveloped & Unused - middle	754	752	$11,410	$8,580,029
Vacant	Undeveloped & Unused - high	272	259	$35,261	$9,132,516
Rounding adjustment			-13		($60,749)
Estimated Costs (Fee) and Acreages		**24,385**	**19,723**		**$92,092,741**
Average Cost Per Acre (Fee)				**$4,669**	

Table 2. **Alternative B - Protection of Lands in a Proposed Cherry Valley NWR through Acquisition of Conservation Easements (50%) and of Fee Interests (50%)**

General Land Use Description	Land Use Codes	Proposed Refuge Acres	Proposed Fee Acres	Est. Cost/ Fee Acre	Proposed Esmnt Acres	Est. Cost/ Esmnt Ac	Est. Tot. Cost
Agriculture	Agricultural Reserve - Act 319	1,633	817	$3,583	816	$2,365	$4,857,151
Agriculture	Agriculture - Act 319	3,432	1,716	$3,001	1,716	$1,981	$8,549,112
Forest	Forest Reserve - Act 319	4,321	2,161	$3,013	2,160	$1,989	$10,807,333
Commnctn/Transp/Utilities	Undeveloped & Unused	39	19	$4,984	20	$3,289	$160,476
Commnctn/Transp/Utilities	Tracts > 150 acs.	3,885	1,943	$4,035	1,942	$2,663	$13,011,551
Industrial	Various	374	187	$2,554	187	$1,686	$792,880
Cultural, Pub./Prvt Parks & Rec	Undeveloped & Unused, etc.	340	170	$3,073	170	$2,028	$867,170
Residential	Household Units < 10 acs.	989	494	$7,908	495	$5,219	$6,489,957
Residential	Household Units > 10 acs.	1,812	906	$2,607	906	$1,721	$3,921,168
Residential	Mobile home courts, garages, etc.	308	154	$5,262	154	$3,473	$1,345,190
Residential	Developments, apts., timeshare, etc.	220	110	$8,879	110	$5,860	$1,621,290
Hotels	Transient lodging	20	10	$11,303	10	$7,460	$187,630
Services, resorts, group camps	Retail, professional, F.I.R.E.	304	152	$13,878	152	$9,159	$3,501,624
Vacant	Undeveloped & Unused - low	1,048	524	$6,590	524	$4,349	$5,732,036
Vacant	Undeveloped & Unused - middle	752	376	$11,410	376	$7,531	$7,121,816
Vacant	Undeveloped & Unused - high	259	129	$35,261	130	$23,272	$7,574,029
Rounding adjustment		-13	-7		-6		
			9,861		9,862		
Estimated Costs (50% Fee, 50% Easement) and Acreages		**19,723**					**$76,540,413**
Average Cost Per Acre (Fee)				**$3,881**			

Non-Federal Funding Options for Protection of Lands in Cherry Valley

It is important to note that significant private, municipal, county and state funds have been spent on land protection efforts in Cherry Valley and will likely continue to serve as an important complement to federal protection actions. There are several additional options for non-federal funding of land acquisition in Cherry Valley that could be helpful in protecting its habitats.

The North American Wetlands Conservation Act Grants Program provides grants under its Standard Grants Program and its Small Grants Program to organizations and individuals who have developed partnerships to carry out wetlands conservation projects. Both are competitive grants programs that require grant requests be matched by partner contributions at no less than a 1-to-1 ratio. The Standard Grants Program supports projects in Canada, the United States, and Mexico that involve long-term protection, restoration, and/or enhancement of wetlands and associated uplands. Total funding in 2008 is $82.4 million, of which 50 percent of total available funds are used to support projects in the United States. Total funding for the U.S. Standard Grants Program in 2008 is $52.9 million. Grant requests to the Small Grants Program may not exceed $75,000 and funding priority is given to grantees or partners new to the Small Grants Program. Funding for 2008 is $2 million.

The Neotropical Migratory Bird Conservation Act Grants Program supports public-private partnerships carrying out projects that promote the long-term conservation of neotropical migratory birds and their habitats. At least 75 percent of the total funding available for grants each fiscal year is to be used to support projects outside the United States. Funding for 2008 is $4.5 million.

The National Oceanographic and Atmospheric Administration's (NOAA) Damage Assessment, Remediation, and Restoration Program works to assess and restore natural resources injured by releases of oil and hazardous substances, as well as by vessel groundings. It works to implement remedial actions that protect NOAA trust resources and to recover funds from responsible parties to assure long-term protection of natural resources.

Conclusion

Alternative B proposes 20,466 acres for protection through their inclusion in the proposed Cherry Valley National Wildlife Refuge. The estimated cost of acquiring the fee interest in these lands is almost $92.1 million. Alternative B estimates that 50% of these lands would be protected through purchase in fee and 50% through the purchase of conservation easements. The estimated cost of fully accomplishing this alternative is slightly in excess of $76,500,000, with an average cost per acre of approximately $3,881. Land protection efforts using non-federal funds have played and will continue to play an essential role in the protection of lands in Cherry Valley.

Appendix G

Response to Public Comments

Introduction

In 2006, the U.S. Congress passed the Cherry Valley National Wildlife Refuge Study Act (Study Act; see also Appendix A). The Final Cherry Valley National Wildlife Refuge Feasibility Study and Environmental Assessment (Final EA) fulfills Section 603 of the Study Act, requiring a report studying the feasibility of establishing a refuge in Cherry Valley. In addition, the U.S. Fish and Wildlife Service (Service, we, our) is using the Final EA to propose the creation of a new refuge. Creating a new refuge is a federal action; therefore, the Final EA is structured as an Environmental Assessment to assist the Service in complying with the National Environmental Policy Act of 1969, as amended (NEPA). NEPA requires that any federal action consider the direct, indirect, and cumulative effects of the action, and that alternatives to the action be considered.

To assist the Service meet the requirements of the Study Act and NEPA, the Service released the Draft Cherry Valley National Wildlife Refuge Feasibility Study and Environmental Assessment (Draft EA) for public review and comment between October 31 and December 5, 2008. Two public meetings were also held during this time. Comments received during this period are summarized and addressed herein, and this document has been appended to the Final EA.

One hundred (100) people attended the public meeting on November 19, 2008 at the Christ Hamilton Lutheran Church in Saylorsburg, Pennsylvania. One hundred and twelve (112) people attended the public meeting on November 20, 2008 at the Stroudsmoor Country Inn in Stroudsburg, Pennsylvania. We received numerous public comments as oral testimony and in writing at public hearings. We also received comments electronically (i.e, emails) from local towns, conservation and recreational organizations, and local residents. Some electronic communications were from other parts of the United States.

The Service reviewed and considered all written communications: letters, e-mails, and comment forms. We summarized oral comments expressed during the public meetings into written comments. In total, 107 written comments were submitted.

Table 1. Summary of written comments concerning a proposed Cherry Valley National Wildlife Refuge, Pennsylvania.

Comments From:	Favorable	Not Favorable	No Preference
Individuals	59	2	6
Government Agencies	5		
Private/Public Groups	25		
Businesses	2		1
Federal & State Representatives	7		
Total	98	2	7

Refuge Support: Expressions of support for the refuge came from 59 individuals, four members of the U.S. Congress, four members of the Pennsylvania State government, and a variety of groups and businesses:

- U.S. Representative Paul Kanjorski
- U.S. Representative Charles Dent
- U.S. Senator Arlen Specter
- U.S. Senator Robert Casey
- Pennsylvania Governor Edward Rendell
- Pennsylvania State Senator Lisa Boscola
- Pennsylvania State Representative John Siptroth
- Pennsylvania State Representative Mario Scavello

- Appalachian Trail Conservancy
- Bloss Associates
- Blue Mountain Preservation Association
- Brodhead Watershed Association
- Cherry Valley Community Supported Agriculture
- Chestnut Hill Township
- Delaware Water Gap National Recreation Area, National Park Service
- East Stroudsburg University
- Eastern Monroe Regional Park Commission
- Friends of Cherry Valley
- Hawk Mountain Sanctuary
- Juniata Audubon Society
- Lake Mineola Home Owners Association
- Lehigh Gap Nature Center
- Lehigh Valley Horse Council
- Lehigh Valley Planning Commission
- Monroe County Board of Commissioners
- Monroe County Conservation District
- Monroe County Open Space Advisory Board
- Monroe County Planning Commission
- Natural Lands Trust
- The Nature Conservancy
- Pennsylvania Department of Conservation and Natural Resources
- Pennsylvania Equine Council
- Pennsylvania Fish and Boat Commission
- Pocono Environmental Education Center
- Pocono Avian Research Center
- Pocono Heritage Land Trust
- Pocono Mountains Visitors Bureau
- Sierra Club
- Smithfield Park and Recreation Commission
- Stroud Township
- Trout Unlimited
- University of Pennsylvania

Refuge Non-support: Two individuals opposed the establishment of a refuge in the area.

Refuge No Preference: Six individuals and one business expressed no clear support or opposition of the refuge but sought clarification on questions and concerns, which are addressed below.

Support for a Specific Alternative: There was no explicit or specific support for Alternative A – No Refuge, although two individuals did not support establishing a refuge as described in Alternatives B and C and generally preferred to retain local control of conservation efforts in the area. Of the 96 individuals and groups that supported creation of a refuge, 68 specifically encouraged support for Alternative B – Diverse Habitat and its acquisition boundary of 20,466 acres. No one specifically supported Alternative C – Wetlands and Ridge Forests over Alternatives A or B. Six individuals and one business did not express a preference for any specific alternative.

Discussion

The following discussion summarizes the substantive issues raised during the comment period and our responses to them. Many of our responses refer to the full text copy of our Draft Study/EA, and indicate how this Final EA reflects any proposed changes. Many comments were in support for the refuge as described in Alternative B and the many activities that may be promoted by a refuge such as wildlife-dependent recreational opportunities, solitude, environmental education, hunting and fishing, and overall habitat conservation for future generations. This Discussion section does not address those comments but addresses comments expressing concern, need for clarification, or opposition. Discussion topics are numbered and grouped into categories for ease in reading.

Land and Habitat Protection

1. Comment: Two individuals asked if it is possible to expand the refuge boundary beyond what has been proposed since there are other valuable habitats in the area, such as Smith Gap (including Kunkletown Rod and Gun Club property), all land from [the Appalachian] trail north to Acquashicola Creek, or lands on the north side of Godfrey's Ridge.

Response: We concluded that going beyond the study area to consider other lands and habitats would be inappropriate. We recognize, however, that protection of other areas could be accommodated in the future if appropriate need was evident and it was conducted under a separate action from the Cherry Valley refuge proposal. We would like to reemphasize statements in Chapter 2 of the Study Report that, based on comments received from the public meetings held in March 2008 along with discussions by the Cherry Valley Study Team, we decided that an area adjacent to the Study Act

boundary, south of Highway 611 and north of the Delaware Water Gap, should be included within the Study Area (Figure 2-1). This area encompasses the lower section of the Cherry Creek watershed. It had been mistakenly omitted from the official Study Act boundary and was therefore included in the Study Area.

2. Comment: Two individuals expressed concern that, based on past experience with the Federal government, they would not want there to be condemnation of private property so those parcels could be included in the refuge.

Response: As noted during the public meetings, and as described in the Land Protection Plan (Study Report Appendix E), the Fish and Wildlife Service has a 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. In rare circumstances, at the request of a willing seller, we can 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. In any event, we do not expect to use friendly condemnation very often, if at all.

3. **Comment:** One person believes a refuge would encourage the Pennsylvania American Water Company to sell its lands to developers since land values may rise due to an attractive refuge nearby, thus the refuge would promote unwanted development.

Response: We do not believe there is any basis to this assertion. The Pennsylvania American Water Company is free to sell its lands as it chooses with or without the presence of a refuge. The Service would encourage communications with the company in the event any valuable habitat parcels became available.

4. **Comment:** One of the local citizens asked what percentage of the 1,250 valley landowners located within the proposed refuge boundary were asked whether they would consider selling their lands to the Service, and also expressed concern that $63.4 million per year in property tax [figure taken from the Draft EA, Appendix D] would be lost and what percentage of this loss would be compensated for by the federal government. Similarly, several persons asked if a refuge or refuge acquisition boundary would result in property being removed from the tax rolls, thus diminishing the local economy and government services such as schools.

Response: The Service has not asked any Cherry Valley property owners about selling their land to the Service, although there has been an awareness of the agency's interest in potentially acquiring lands by local residents due to the public meetings and outreach that has been conducted on this study through most of 2008. We expect that some lands of high habitat value will become available, and the Service would like to protect

that land for fish and wildlife resources. Typically, once a refuge land protection boundary has been approved, we then contact landowners having high value habitat to determine whether any are interested in selling. There is generally a fairly long list of willing sellers ready to sell property.

Regarding the concern for lost tax revenue, the fiscal impact to Monroe County and its municipalities due to the establishment of a refuge will depend on both the quantity of refuge land acquired and the rate at which it is acquired. The $63 million referenced in the comment is not an estimate of lost tax revenue, but is an estimate of the total 2008 tax revenue for all of the properties within the Study Area. Most of the tax revenue is generated from the "developed" parcels that have the least value and interest from a refuge stand point. This, along with other information presented in the Draft and Final EAs (re: Appendix D – Economic Analysis) supports the conclusion that there would likely be minor economic impacts on the local tax base associated with creation of the refuge.

Additionally, while land owned by the U.S. Government is not taxable by state or local authorities, the federal government has a program in place to partially compensate local governments for foregone tax revenues. The Refuge System typically makes a revenue sharing payment, annually, to local governments. The payment made depends on the revenues that accrue to the Refuge System and the proportion of those revenues and general funds that are appropriated by Congress for revenue sharing purposes. In recent times, the payment has been less than what the government may have received through normal taxation. It should be noted that the property that is most highly assessed within the Study Area (e.g., residential, industrial, and retail) represents those parcels that have the least desirable characteristics, from a national wildlife refuge perspective. Other things to consider are that there are less infrastructure and maintenance costs associated with lands that are part of protected wildlife habitat compared to developed lands.

5. **Comment:** One person believed once the Federal government becomes involved and owns land in the valley that the people lose control over those lands, and that the government does not fulfill promises made.

Response: Lands held in trust by the National Wildlife Refuge System, as part of the Service, are public-trust lands. Broad statutes and policies of the federal government, Department of the Interior, and the Service, notably those implementing the National Environmental Policy Act and National Wildlife Refuge Administration Act (as amended), provide ample opportunity for the public to be involved in the management of a refuge. The public review opportunities for the are examples of that requirement being implemented. Working in concert with the Friends of Cherry Valley and other grass roots organizations in the valley, the Service and refuge staff will assure open and effective management of the refuge for wildlife and their habitats, and public uses that are appropriate and compatible on the refuge.

6. **Comment:** Several individuals asserted that land protection already can be promoted at the local level, that there are adequate opportunities for funding conservation easements (e.g., bond issuances and the Lackawanna County partnership with Growing Greener Program), and that a refuge is not needed. Similarly, another individual remarked that the U.S. Fish and Wildlife Service needed to evaluate land protection alternatives that involve reliance on state and local mechanisms.

Response: As noted in the Draft and Final EAs, for the past 20 years, housing starts have increased dramatically in Monroe County, including parts of the Study Area. This growth and land development pressure is expected to continue over the long term and existing pressures on wildlife habitats are greater than the current land protection programs can accommodate. Chapter 3 of the Final EA (re: No-Action Alternative) discussed current state and local land protection mechanisms, concluding they were insufficient in meeting habitat protection needs for the valley's fish and wildlife resources.

Recognizing the inability of any one organization to solve the problems of habitat displacement and fragmentation, we believe that cooperative habitat-conservation efforts, including a National Wildlife Refuge -- could effectively protect important wildlife habitat in Cherry Valley from this pressure. We would work to combine our efforts with those of many supporters as noted above, such as The Nature Conservancy, Friends of Cherry Valley, Pennsylvania Fish and Boat Commission, Pennsylvania Game Commission, and the Pocono Heritage Land Trust. A new refuge will provide local landowners with one additional tool to conserve their natural and cultural heritage as they consider the future of their land. Voters in Monroe County have consistently supported additional land protection. During our public involvement for the Draft EA, local residents and county and municipal officials expressed enthusiasm about Service land protection. Many people encouraged us to develop a larger proposal. Land protection by the Service, while aimed at protecting trust resources, watersheds, and other natural resource values, would also help maintain the rural character of the area.

7. **Comment:** One individual remarked that uplands will continue to be purchased and developed, and that such development will still impact local wetlands. How will a refuge acquiring and owning only the wetlands help in this situation?

Response: The proposed refuge boundary contains a diverse array of habitat types, including uplands and wetlands. The presence of a refuge in the valley will not prevent lands from being developed but will offer the community and landowners another tool for wildlife conservation. It is not the purpose of the refuge to prevent development but to offer the community and nation an opportunity to protect lands and habitats for a host of unique and rare wildlife, and the associated public use benefits to be derived from a refuge. The Service would acquire select habitats in priority order, as noted in the Conceptual Management Plan (Appendix B of the Final EA) and the Land Protection

Plan (Appendix E of the Final EA) and will seek where possible to protect a biologically rich and diverse mix of uplands adjacent to wetlands to maintain the overall ecological health and integrity of the ecosystem.

8. **Comment:** One local citizen believes the apparent support for a refuge is overstated and that some landowners have secured conservation easements on their property, not because they want to participate in land conservation along with a refuge, but because they want to show they can protect their lands without a refuge.

Response: The Service has not received any indication from any landowner that a conservation easement was placed on a property for the purpose of demonstrating that a refuge was not needed. The overwhelming support documented during the study process, including comments received during the public review period and public meetings, convincingly shows a community eager to have a national wildlife refuge.

9. **Comment:** One individual believed a local landowner with a long history in the valley should have been part of the study team to reflect concerns that have developed over years of engagement by the federal government to take property away from local people, noting the Tocks Dam issue of years past.

Response: The Cherry Valley Study Team (re: Final EA, Chapter 1) represented a diverse collection of recognized experts who could help the Service evaluate the value of Cherry Valley habitats for potential inclusion into the National Wildlife Refuge System. The Cherry Valley Study Team included local experts from Monroe County Planning Commission, Monroe County Conservation District, East Stroudsburg University, and Northampton Community College. Once that evaluation was completed, as documented in the Draft EA, landowners and the public at large had opportunities to provide review, input, and comments.

Wildlife Management

10. **Comment:** What will happen with invasive plants if the refuge is established?

Response: Appendix B of the Draft and Final EAs presents the Conceptual Management Plan for the refuge. Within that plan there is a series of priority activities that would be undertaken, one of which is "Work with partners to monitor and eradicate exotic or invasive plant and animal species to preclude threats to the integrity of the ecosystem." It may take time to acquire adequate staff and funding resources to meet this priority, but it is a need that is widely recognized and appreciated.

11. **Comment:** One individual believes adequate habitat for species described in the Draft EA, along with places for solitude, environmental education, and ample

opportunity for public recreational activities, exist already within the confines of the 70,000 acre Delaware Water Gap National Recreation Area.

Response: We agree that it is advantageous to have the nearby Delaware Water Gap National Recreation Area (DWGNRA) and its habitat and public recreation opportunities. Information provided in the Draft EA (re: Chapter 2), however, provides extensive justification on why habitats within the Study Area are considered by the Service as nationally significant and are suitable for inclusion into the Refuge System. Comments received from the Superintendent of the DWGNRA show strong support for a refuge, and recognize that the recreation area cannot exist as an "ecological island" surrounded by suburban development. Additionally, public wild lands will contain the essential corridors and expansive habitats that can better provide for the needs of migrating, nesting, and rare species.

Public Use Managment

12. **Comment:** Two individuals believe it is no longer safe to ride horses along valley roads, and would like to see any proposed refuge trails accommodate multi-use, trails that hikers, bikers, and horseback riders could share.

Response: Although horseback riding is an activity that may be permitted on a national wildlife refuge provided appropriate use and compatibility use policies are satisfied (re: Chapter 1 on policy discussions), it is not a priority public use. The National Wildlife Refuge System Improvement Act establishes six priority public uses on refuges: hunting, fishing, wildlife observation and photography, and environmental education and interpretation, often referred to as the "Big-6." Because of the central priority of refuges is to benefit wildlife and their habitats, many recreational activities that are not included in the Big-6 are not permitted. However, some recreational activities often are permitted (e.g., cross-country skiing, haying, grazing of livestock). The refuge manager responsible for a Cherry Valley NWR would conduct a formal compatibility determination to assess if horseback riding would be an appropriate and compatible use on the refuge. The analysis would include a process for public review.

13. **Comment:** It would be helpful to know if other refuges near large municipalities suffer damage from excessive public use.

Response: Even though some of our refuges receive heavy public use, we take all necessary precautions to manage public use to minimize negative effects to refuge habitats and wildlife. Policies of the National Wildlife Refuge System provide for careful and thoughtful management of public use so that the principal wildlife-protection purposes and goals of the refuge are not compromised (re: policy descriptions in Chapter 1). We have every expectation that as the Cherry Valley NWR reaches a size where wildlife dependent (Big-6) public uses become feasible, that such uses would be designed and structured to maximize public benefit while eliminating or minimizing any

potential negative effects. hese uses would be identified through the formulation of a detailed refuge Comprehensive Conservation Plan (CCP) and the associated Visitor Use Plan and other associated "step-down" management plans that link back to the CCP.

14. **Comment:** One public meeting attendee wants to know what will happen once a refuge is established, particularly with "future studies concerning hunting, fishing, hiking, and bird watching."

Response: We expect these activities to continue in the Cherry Valley. One of the requirements for managing a refuge is to develop a Comprehensive Conservation Plan (CCP) that identifies a vision of future conditions for the refuge, along with specific goals and objectives that set the stage for day-to-day management. The CCP covers a 15 year period. A detailed Visitor Use Plan is incorporated into this planning process. Through these planning efforts, which involve public review and input, specific activities will be identified for the Cherry Valley NWR for hunting, fishing, and other Big-6 activities.

15. **Comment:** One public meeting attendee "supports Alternative B, provided that the proposed refuge does not conflict with the purposes of the Township and Regional Park and Recreation to provide for recreation facilities on those lands that are within the Study Area."

Response: There would be no conflict for park and recreation activities that occur within the refuge acquisition boundary. Only when lands within the acquisition boundary are acquired for the refuge would the Service have the authority and obligation to determine which public use activities could be permitted.

16. **Comment:** Regarding refuge access by the public, a State Fish and Boat Commission representative encouraged opportunities for fishing.

Response: Table 1 of the Conceptual Management Plan (Draft EA, Appendix B) summarizes public uses that would likely be allowed during the interim phase and their potential limitations under current conditions in Cherry Valley. Fishing is one of the public uses that would be considered and encouraged in accordance with the National Wildlife Refuge Improvement Act. Appendix B, Attachment B.2 presents the draft compatibility determinations summarized in Table 1 of the Draft EA. Final compatibility determinations are presented in Appendix B, Attachment B.2 of the Final EA.

17. **Comment:** One individual believes public use on the refuge will be damaging and contribute to exhaust pollution, that there will be dirt bikes, horseback riders, plant thieves, and illegal hunting. They also believe the refuge will limit deer hunting thus diminishing license revenue needed for conservation while also enabling more deer to damage habitats for rare wildlife.

Response: Chapter 4 of the Draft and Final EAs – Environmental Effects – addresses impacts that may be associated with public use. We believe impacts would be minimal and that the benefits of wildlife dependent public uses would be an essential and constructive value to the community. Hunting is a priority public use and is expected to continue. The extent to which deer hunting and other forms of hunting would be allowed will be determined by the refuge manager following a formal planning and public review process. Many factors will be considered during that planning process including the level of harvest that may be appropriate to reduce excessive deer browse and habitat deterioration as well as the recreational benefits of public hunting.

Agriculture and Farming

18. **Comment:** A few individuals expressed concern that agricultural land stay in active agricultural use, and that farmlands already protect species and habitats via easements and vegetation management. One person suggested that in lieu of creating a refuge, that efforts be taken to continue to use agricultural practices to manage habitats and to perform formal research on such practices for the benefit of species conservation.

Response: The Service will work cooperatively with interested farmland owners, thus helping to maintain the rural character of the valley. Maintenance of existing grasslands and management of select agricultural lands to grassland habitat would benefit bobolink, meadowlark, grasshopper sparrow, and other grassland birds suffering from habitat loss. Conducting research on the refuge will become an integral part of refuge management, and research on the benefits of select agricultural practices is certainly conceivable.

Socioeconomic

19. **Comment:** Three individuals asked if being located within the refuge acquisition boundary would hinder or restrict business activities in the community such as fish hatcheries, machine shops, excavation operations, or concrete manufacturing facilities.

Response: Establishment of an acquisition boundary for a Cherry Valley National Wildlife Refuge would not hinder or restrict businesses located within that boundary. The term "acquisition boundary" means only that the Service can negotiate to purchase land and conservation easements from willing property owners from within the established boundary. Property owners are under no obligation to the Service and have the same options available to them as before for selling their property on the open real estate market as well as negotiating easements with other state and local governments and conservation organizations. What the refuge presence does add is that property owners have an additional potential buyer, and therefore additional land preservation options available to them.

Regarding additional regulations for businesses, there are no additional regulatory requirements placed on any facility because of the presence of a refuge. Each business and property owner is required to comply with the existing state or other regulatory entities. This is the case whether a facility is located inside the proposed refuge's acquisition boundary or not. The National Wildlife Refuge System is a land management agency and not a regulatory agency. As such, we do not anticipate any difference to the day-to-day operations or long term planning, growth, or expansion plans based on the refuge proposal.

Administrative/Planning/General Management

20. Comment: One individual expressed concern about how a new refuge could be established when federal funding and staffing for refuges in the Northeast has been reduced over recent years.

Response: The National Wildlife Refuge System Improvement Act of 1997 calls for the continued growth of the Refuge System in a manner that is best designed to accomplish the mission of the Refuge System, to contribute to the conservation of the ecosystems of the United States, to complement efforts of other federal agencies and of states to conserve fish and wildlife and their habitats, and to increase support for the Refuge System and participation from conservation partners and the public. We are convinced, after having thoroughly studied the valley and having the benefit of the information therein, that the habitats proposed in Alternative B of the Draft EA should be incorporated into the Refuge System for all of the purposes just mentioned. The Service is extremely demanding when considering new lands for the Refuge System, and has not established a new refuge in the Northeast Region since 1995. We are very sensitive to staffing and funding needs; however, we recognize the ever-present importance of securing lands first when they are identified as nationally significant, as Cherry Valley has been. We will move with all due diligence to make Cherry Valley refuge a reality while continuing to balance the staffing and funding needs for all refuges in the Northeast Region.

The staffing situation on national wildlife refuges is based on a number of factors including refuge size and complexity, proximity to other refuges, and funding. Based on these and other factors, the proposed refuge may be managed as a stand alone refuge or as a unit of a refuge complex. A stand alone refuge has a dedicated staff and equipment and is managed locally whereas a unit of a complexed refuge would share staff and equipment with other refuge units. At this time it is not possible to estimate staffing specifics for the proposed Cherry Valley National Wildlife Refuge because of uncertainties associated with actual progression of land acquisition. Some examples of potential staffing models are presented in Appendix B, Attachment B.1 of both the Draft and Final EAs.

It is important to recognize that there are separate funding sources for administering refuges (staff, facilities, equipment) and purchasing lands and interests therein. Administrative operational funds are allocated annually by Congress and cannot be used to purchase lands, and funds for land acquisition cannot be used to fund refuge operational activities. Much of our funding to buy land comes from the Land and Water Conservation Fund (LWCF). 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 within the approved acquisition boundary, if established. Another potential source for funding for land or easement acquisition is the North American Wetland Conservation Act, which supports a 1:1 federal/private matching grant program for habitat acquisition and restoration on refuges and private lands. Land may also be acquired through donation, or included in refuge management activities through agreements and other cooperative arrangements.

21. **Comment:** What is the timetable for introduction of legislation for this refuge, and will the Service speed up or slow down that process?

Response: Refuges can be established through legislation or by the Service's exercising its existing legislatively-based authority to establish the refuge through administrative means. In the case of Cherry Valley, the Service proposes to establish an acquisition boundary administratively.

Copies of the Draft EA and Final EA are available online at: http://www.fws.gov/northeast/planning/Cherry%20Valley/lcphome.html. You may also request these documents by contacting Carl Melberg, Refuge Planner, at: U.S. Fish and Wildlife Service; 73 Weir Hill Rd.; Sudbury, MA 01776; 978/443 4661 x 32; 978/443 2898 fax; www.northeastplanning@fws.gov (*please include "Cherry Valley" in the subject line of your email*).

Acronyms and Abbreviations

ACJV	Atlantic Coast Joint Venture
AMBCR	Appalachian Mountains Bird Conservation Region
ARPA	Antiquities Resource Protection Act
AT	Appalachian Trail
BCS	Birds of Conservation Concern
BCR	Bird Conservation Region
CCP	Comprehensive Conservation Plan
CEQ	Council on Environmental Quality
CMP	Conceptual Management Plan
CSA	Community Supported Agriculture
CVST	Cherry Valley Study Team
DCNR	(Pennsylvania) Department of Conservation and Natural Resources
DEP	(Pennsylvania) Department of Environmental Protection
EA	Environmental Assessment
Eagle Act	Bald and Golden Eagle Protection Act
EBTJV	Eastern Brook Trout Joint Venture
Final EA	Final Cherry Valley NWR Feasibility Report and EA
HJP	Hamilton, Jackson, Pocono (townships)
Improvement Act	National Wildlife Refuge System Improvement Act of 1997
IPCC	Intergovernmental Panel on Climate Change
LPP	Land Protection Plan
MANEM Region	Mid-Atlantic/New England/ Maritimes Region
MBTA	Migratory Bird Treaty Act
NABCI	North American Bird Conservation Initiative
NAWMP	North American Waterfowl Management Plan
NEPA	National Environmental Policy Act of 1969
NHCR	National State Agency Herpetological Conservation Report
NWR	National Wildlife Refuge
PARC	Partners in Amphibian and Reptile Conservation
PIF	Partners in Flight
Refuge	National Wildlife Refuge
Refuge System	National Wildlife Refuge System
Secretary	Secretary of the Department of Interior
Service	U.S. Fish and Wildlife Service
SHPO	(Pennsylvania) State Historic Preservation Office
Study Act	Cherry Valley Study Act of 2006
SWG	State Wildlife Grant program
TNC	The Nature Conservancy
U.S.	United States
USFWS	U.S. Fish and Wildlife Service
WAP	(State) Wildlife Action Plan
WMU	Wildlife Management Unit
WPC	Western Pennsylvania Conservancy

National Wildlife Refuge System
300 Westgate Center Drive
Hadley, MA 01035
413/253 8636
413/253 8468 FAX
http://www.fws.gov/northeast/planning/Cherry%20Valley/lcphome.html
northeastplanning@fws.gov

Federal Relay Service
for the deaf and hard-of-hearing
1 800/877 8339

U.S. Fish & Wildlife Service
http://www.fws.gov

For Refuge Information
1 800/344 WILD

December 2008

Cherry Valley (background photo) and *Bog Turtle*
George C. Gress/The Nature Conservancy

Northeastern bulrush
The Nature Conservancy

Eastern brook trout
Eric Engbretson/USFWS

Cerulean warbler
Ohio Department of Natural Resources