

Chapter 1



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Purpose of, and Need for, Action

- Introduction
- The Purpose of, and Need for, the Proposed Action
- Refuge Overview
- The Service, its Policies and Legal Mandates
- Conservation Plans and Initiatives Guiding the Proposed Action
- Refuge Establishment, History, and Purpose
- Refuge Administration
- Refuge Operational Plans ("Step-Down" Plans)
- Refuge Vision Statement
- Refuge Goals
- The Comprehensive Conservation Planning Process
- Issues, Concerns, and Opportunities
- Decisions to be Made

1.0 Introduction

This draft comprehensive conservation plan (CCP) was prepared for the Great Swamp National Wildlife Refuge (NWR) pursuant to the National Wildlife Refuge System Administration Act of 1966 (Administration Act), as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. 668dd, Improvement Act). This document also serves as an environmental assessment (EA), in compliance with the National Environmental Policy Act of 1969 (NEPA).

The CCP presents and analyzes the environmental effects of alternative combinations of management goals, objectives, and strategies. Our proposed action is alternative B, which we believe will best achieve our vision for the refuge; contribute to the mission of the National Wildlife Refuge System (Refuge System); achieve refuge purposes; fulfill legal mandates; address key issues; incorporate sound principles of fish and wildlife management; and serve the American public. This CCP will guide management decisions and actions on the refuge over the next 15 years. It will also help us communicate our priorities to the natural resources agencies of the State of New Jersey, our conservation partners, local communities, and the public. As part of this process, we have met our requirements to coordinate, interact, and cooperate with adjoining landowners and State fish and wildlife agencies under the Administration Act, as amended, 16 U.S.C. 668dd(e)(3).



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This CCP includes five chapters and five appendixes.

Chapter 1, "The Purpose of and Need for Action," explains the purposes of and need for preparing a CCP, and sets the stage for five subsequent chapters and five appendixes. Specifically, chapter 1:

- Defines our planning analysis area;
- Presents the mission, policies, and mandates affecting the development of the CCP;
- Identifies other conservation plans we used as references;
- Lists the purposes for which the refuge was established and its land acquisition history;
- Clarifies the vision and goals that drive refuge management;
- Describes the planning process we followed, including public and partner involvement in developing the CCP;

- Describes our compliance with NEPA regulations; and
- Identifies public issues or concerns that surfaced as we developed the CCP.

Chapter 2, "The Existing Environment," describes the physical, biological, and human environments of the refuge.

Chapter 3, "Alternatives Considered Including the Preferred Alternative," includes an alternatives summary comparison matrix and describes goals and objectives for specific conservation targets and visitor programs, as well as the management actions for achieving the objectives.

Chapter 4, "Environmental Consequences," provides an analysis of environmental effects associated with implementing the various management actions prescribed under the alternatives in chapter 3.

Chapter 5, "Consultation and Coordination," summarizes how we involved the public and our partners in the planning process and lists the members of the core planning team and other U.S. Fish and Wildlife Service (FWS) personnel who provided assistance in the development of this CCP. Our partners' involvement is vital for future management of this refuge and all national wildlife refuges.

This CCP also includes a Glossary of Terms with Acronyms, Bibliography of Literature Cited, and five appendixes that provide additional documentation and references to support the narratives and analyses within this plan.

1.1 The Purpose of, and Need for, the Proposed Action

The purpose of the CCP is to provide reasonable, scientifically grounded guidance for management of refuge habitats and wildlife, and administration of public uses on refuge lands. This draft CC, including the preferred alternative, was developed for the refuge and best achieves the purposes, vision, and goals of the refuge; contributes to the mission of the Refuge System; adheres to FWS policies and other mandates; addresses identified issues of significance; and incorporates sound principles of fish and wildlife science.

There are several reasons why there is a *need* for a CCP for Great Swamp NWR. First, the Improvement Act requires all national wildlife refuges to complete a CCP to help fulfill the mission of the Refuge System. Second, new FWS policies providing specific guidance on implementing the Administration Act, as amended have been developed since the refuge was established. A CCP incorporates those policies and develops strategic management direction for the refuge for the next 15 years, by:

- Providing a comprehensible statement of desired future conditions for habitat, wildlife, visitor services, staffing, and facilities;
- Providing State agencies, refuge neighbors, visitors, partners, and other stakeholders with a clear understanding of the reasons for management actions;
- Ensuring refuge management is consistent with the purposes of Great Swamp NWR, the policies and goals of the Refuge System and legal mandates;

- Ensuring that present and future public uses are appropriate and compatible;
- Providing long-term continuity and consistency in management direction; and
- Justifying annual budget requests and providing direction for staffing, operations, and maintenance.

Third, the refuge’s 1987 Master Plan Final Environmental Impact Statement is outdated. Since its publication, management priorities have changed. For example, the northern population of the bog turtle [*Glyptemys (Glyptemys) muhlenbergii*], which inhabits the refuge, was listed as threatened in accordance with the Endangered Species Act (ESA) in 1997, and is now managed as a priority species. In addition, Indiana bat [*Myotis sodalis*, federally endangered (listed in 1967)] maternity colonies were discovered at Great Swamp NWR in 2005. The Indiana bat has also become a management priority at the refuge. Other



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species that are managed as priority species include the wood turtle [*Glyptemys (formerly Clemmys) insculpta*, State-threatened (1979)] and blue-spotted salamander [*Ambystoma laterale*, State-endangered (1974)]. New conservation plans have been developed, which influence refuge management. The priority of habitat management and restoration to control invasive species has grown. Residential development in the surrounding area continues to increase, which has resulted in changes to water quality and quantity in Great Swamp NWR. Additionally, warming of the climate system is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level (USFWS 2010a). Climate change has

increased the need for research, monitoring, and adaptive management techniques and strategies.

Lastly, as responsible stewards of Federal lands, conveying our vision and priorities for the refuge to our partners, local communities, and interested and affected individuals is imperative.

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

1.2 Refuge Overview

Great Swamp NWR encompasses 7,768 acres and is located 26 miles from New York City within the Townships of Chatham, Harding, and Long Hill of Morris County in north-central New Jersey (Map 2-1). Great Swamp NWR is situated north of Interstate 78 and east of Interstate 287. The refuge has an approved acquisition boundary that would allow for refuge expansion to a maximum of 9,429 acres (Map 2-2).

The surrounding area is heavily suburbanized, and as a result, the refuge has become an island of wildlife habitat in a sea of development. The refuge provides vital brooding, nesting, feeding, and resting habitat for a variety of migratory bird species, including waterfowl. Although established primarily for migratory birds, the refuge's mosaic of forested wetlands, emergent wetlands, and various successional stages of upland vegetation provides habitats for a diversity of wildlife species. The refuge has five major impoundments, totaling approximately 570 acres. These impoundments are managed for marsh habitat that contains wetland plant diversity similar to natural marsh habitat in northern New Jersey.

1.3 The U.S. Fish and Wildlife Service, Its Policies, and Legal Mandates

This section highlights the U.S. Fish and Wildlife Service (FWS, we, our), the Refuge System, FWS policy, and the laws, regulations, and mandates that directly influenced the development of this CCP.

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

The FWS, a bureau of the Department of the Interior (the Department), administers the Refuge System. The FWS's mission is *"working with others, to conserve, protect and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people."* Congress entrusts the FWS with the conservation and protection of natural resources, such as migratory birds and fish, federally listed endangered or threatened species, interjurisdictional fish, and certain marine mammals. The FWS also manages national wildlife refuges and national fish hatcheries, enforces Federal wildlife laws and international treaties on importing and exporting wildlife, assists with state fish and wildlife programs, and helps other countries develop wildlife conservation plans.

The FWS manual contains the directives to implement its authorities, responsibilities, and activities. The manual can be viewed on the Web at <http://www.fws.gov/policy/manuals/>. Special FWS directives affecting the rights of citizens or the authorities of other agencies are published separately in the Code of Federal Regulations (CFR); the FWS manual does not duplicate these directives (see 50 CFR 1-99 at <http://www.access.gpo.gov/nara/cfr/index.html>).

1.3.2 The National Wildlife Refuge System and its Mission and Policies

The Refuge System is the world's largest collection of lands and waters set aside specifically for the conservation of wildlife and the protection of ecosystems. Since its establishment in 1903, the Refuge System has grown to 562 national wildlife refuges encompassing more than 150 million acres of lands and waters in all 50 states and several island territories. The Refuge System also includes waterfowl production areas in ten states and four marine national monuments in the Pacific Ocean. Each year, more than 44 million visitors hunt, fish, observe and photograph wildlife, or participate in environmental education and interpretation on refuges (USFWS 2010b).

Of all the laws governing activities on refuges, the Administration Act exerts the greatest influence. In 1997, President Clinton signed into law the Improvement Act, which amended the Administration Act by including a unifying mission for the Refuge System, a new process for determining compatibility of public uses on refuges, and a requirement that each refuge be managed under a CCP developed in an open public process. The Improvement Act states that first and foremost, the Refuge System must focus on

wildlife conservation. It also states that the mission of the Refuge System, coupled with the purpose(s) for which each refuge was established, will provide the principal management direction for that refuge.

The mission of the Refuge System is:

"To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans" – National Wildlife Refuge System Improvement Act; Public Law 105-57.

The Refuge Manual contains policies governing the operation and management of the Refuge System that the FWS manual does not cover, including technical information on implementing refuge policies and guidelines on enforcing laws. The Refuge Manual can be reviewed at refuge headquarters, and the policies that played an instrumental role in developing this CCP can be viewed at <http://www.fws.gov/policy/manuals/part.cfm?series=600&seriestitle=LAND%20USE%20AND%20MANAGEMENT%20SERIES>.

The ***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 FWS mission, and explains the relationship of the Refuge System mission and goals, and the purpose(s) of each unit in the Refuge System (USFWS 2006a). In addition, this policy identifies the goals of the Refuge System, as follows:

- Conserve a diversity of fish, wildlife, and plants and their habitats, including species that are endangered or threatened with becoming endangered;
- Develop and maintain a network of habitats for migratory birds, anadromous and interjurisdictional fish, and marine mammal populations that is strategically distributed and carefully managed to meet important life history needs of these species across their ranges;
- Conserve those ecosystems, plant communities, wetlands of national or international significance, and landscapes and seascapes that are unique, rare, declining, or under-represented in existing protection efforts;
- Provide and enhance opportunities to participate in compatible wildlife-dependent recreation (hunting, fishing, wildlife observation and photography, and environmental education and interpretation); and
- Foster understanding and instill appreciation of the diversity and interconnectedness 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.

The *Policy on Refuge System Planning* (602 FW 1 through 4) establishes the requirements and guidance for Refuge System planning, including CCPs and other step-down management plans (USFWS 2000a). It states that all refuges will be managed in accordance with an approved CCP that, when implemented, will help:

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

The planning policy provides explicit directions and identifies the minimum requirements for developing CCPs. As part of this process, any existing special designation areas, such as Wilderness and Wild and Scenic Rivers, must be reviewed; the potential for any new special designations must be addressed; a wilderness review must be conducted; and a summary of that review must be incorporated into each CCP (602 FW 3) (USFWS 2000b). In addition, this policy also requires the FWS to prepare step-down management plans when required by policy or when necessary to provide strategies and schedules for meeting goals and objectives identified in the CCP (602 FW 4) (USFWS 2000c).

Federal law and FWS policy provide the direction and planning framework for protecting the Refuge System from inappropriate, incompatible, or harmful human activities and ensuring that visitors can enjoy its lands and waters. The *Policy on the Appropriateness of Refuge Uses* (603 FW 1) provides a national framework for determining appropriate refuge uses to prevent or eliminate those that should not occur in the Refuge System (USFWS 2006b). It describes the initial decision process the refuge manager follows when first considering whether to allow a proposed use on a refuge. An appropriate use must meet at least one of the following four conditions:

1. The use is a wildlife-dependent recreational use as identified in the Improvement Act.
2. The use contributes to fulfilling the refuge purpose(s), the Refuge System mission, or goals or objectives described in a refuge management plan approved after October 7, 1997, the date the Improvement Act became law.
3. The use follows state regulations for the take of fish and wildlife.



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4. The use has been found to be appropriate after concluding a specified process. The refuge manager will base the finding of appropriateness on the following 10 criteria:
 - a. Does the FWS have jurisdiction over the use? If not, the FWS has no authority to consider the use.
 - b. Is the proposed use consistent with all applicable laws and regulations? Uses prohibited by law are not appropriate.
 - c. Is the use consistent with applicable Executive Orders and Department and FWS policies? If the proposed use conflicts with an applicable Executive Order or Department or FWS policy, the use is not appropriate.
 - d. Is the use consistent with public safety? If the proposed use creates an unreasonable level of risk to visitors or refuge staff, or if the use requires refuge staff to take unusual safety precautions to assure the safety of visitors or other refuge staff, the use is not appropriate.
 - e. Is the use consistent with refuge goals and objectives in an approved management plan or other document? If the proposed use, either itself or in combination with other uses or activities, conflicts with a refuge goal, objective or management strategy, the use is generally not appropriate.
 - f. Has the proposed use been previously determined not appropriate? Unless circumstances or conditions have changed significantly, no further analysis is required. If this is the first time the use has been proposed, the FWS may further consider the use.
 - g. For uses other than wildlife-dependent recreational uses, is the proposed use manageable within available budget and staff? If the proposed use diverts management efforts or resources away from proper and reasonable management of a refuge activity or wildlife-dependent recreation use, the use is typically not appropriate. The refuge manager may consider volunteers or refuge support groups in evaluating resources available.
 - h. Will the use be manageable in the future within existing resources? If the use can be managed to reduce or eliminate impacts to natural and cultural resources, or if limits are clearly established, the use may be further considered by the FWS.
 - i. Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or does the use benefit the refuge's natural or cultural resources? If not, the use is generally not appropriate (USFWS 2006b).

This policy can be accessed on the Web at <http://www.fws.gov/policy/603fw1.pdf>.

The *Policy on Compatibility* (603 FW 2) complements the *Policy on the Appropriateness of Refuge Uses* (603 FW 1). Once a refuge manager finds a use appropriate, the use is further evaluated through a Compatibility Determination (CD). The policy provides guidelines for determining compatibility of uses and procedures for documentation and periodic review of existing uses (USFWS 2000d). Highlights of the guidance in that chapter follows:

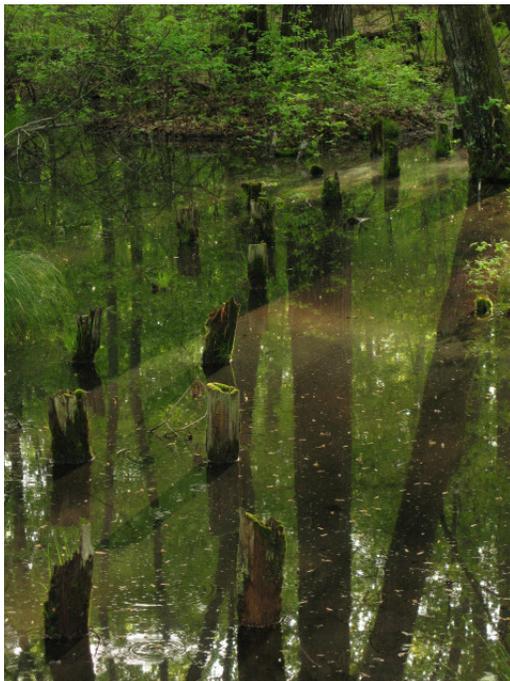
- The Improvement Act and its regulations require an affirmative finding by the refuge manager on the compatibility of a public use before it is permitted on a national wildlife refuge.
- A compatible use is one “that will not materially interfere with or detract from the fulfillment of the mission of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

The *Policy on Wildlife-Dependent Public Uses* (605 FW 1) of the FWS manual presents specific guidance on implementing a quality, wildlife-dependent recreation program (USFWS 2006c). “Quality” is defined as a program that:

1. Promotes safety of participants, other visitors, and facilities;
2. Promotes compliance with applicable laws and regulations and responsible behavior;
3. Minimizes or eliminates conflict with fish and wildlife population or habitat goals or objectives in an approved plan;
4. Minimizes or eliminates conflicts with other compatible wildlife-dependent recreation;
5. Minimizes conflicts with neighboring landowners;
6. Promotes accessibility and availability to a broad spectrum of the American people;
7. Promotes resource stewardship and conservation;
8. Promotes public understanding and increases public appreciation of America’s natural resources and our role in managing and conserving these resources;
9. Provides reliable and reasonable opportunities to experience wildlife;

10. Uses facilities that are accessible to people and blend into the natural setting; and
11. Uses visitor satisfaction to help define and evaluate programs.

The *Policy on Maintaining Biological Integrity, Diversity and Environmental Health* (601 FW 3) provides guidance on maintaining or restoring the biological integrity, diversity, and environmental health (BIDEH) of the Refuge System, including the protection of a broad spectrum of fish, wildlife, and habitat resources in refuge ecosystems (USFWS 2001a). It provides refuge managers with a process for evaluating the best management direction to prevent the additional degradation of environmental conditions and restore lost or severely degraded components of the environment. It also provides guidelines for dealing with external threats to the BIDEH of a refuge and its ecosystem.



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1.3.3 Other Mandates

Although FWS and Refuge System policy and the purpose(s) of each refuge provide the foundation for its management, other Federal laws, Executive Orders, treaties, interstate compacts, and regulation on conserving and protecting natural and cultural resources also affect how we manage refuges. The “Digest of Federal Resource Laws of Interest to the U.S. Fish & Wildlife Service” describes many of these laws at <http://www.fws.gov/laws/Lawsdigest.html>. Below are some noteworthy Federal resource laws that influence the management of Great Swamp NWR.

In response to public demand, the *Refuge Recreation Act of 1962* (16 U.S.C. 460K–460K–4; Public Law 87-714) was established to assure present or future recreational uses by the public on areas within the national wildlife refuges, game ranges, national fish hatcheries, and other conservation areas administered by the Secretary of Interior for fish and wildlife purposes, given that the recreational uses are compatible with the primary purposes of the conservation

area. The Act also provided for public fees, permits, and penalties for violations of regulations, and also authorized the acceptance of donations of funds and property to assist in carrying out its purpose(s). The Act also authorized the acquisition of land and interests suitable for (1) fish and wildlife-oriented recreation; (2) protection of natural resources; (3) conservation of endangered or threatened species; or (4) carrying out two or more of the above. These lands must be adjacent to or within an existing conservation area (Refuge Recreation Act of 1962).

Executive Order 12996 was signed by President Clinton in 1996 “to set new direction and ensure new opportunity for wildlife-dependent recreational uses” (USFWS 2008b). This Executive Order defined the conservation mission of the Refuge System, provided guiding principles for management and public use of the refuge system, and identified six compatible wildlife-dependent recreational uses, including hunting, fishing, photography, wildlife observation, environmental education, and interpretation (USFWS 2008a).

The *National Wildlife Refuge System Centennial Act* was passed as part of Public Law 106-408 on November 21, 2000. The purpose of this Act was to establish a commission to promote awareness by the public; develop a long-term plan to meet the priority needs; require an annual report addressing the needs of the Refuge System; and improve public use programs and facilities (National Wildlife Refuge System Centennial Act).

Of particular note are the Federal laws that require the FWS to identify and preserve its important historic structures, archaeological sites, and artifacts. NEPA mandates our considerations of cultural resources in planning Federal actions. The Improvement Act requires the CCP for each refuge to identify its archaeological and cultural values. Following is a highlight of some cultural and historic resource protection laws that relate to the development of CCPs.

- The *Archaeological Resources Protection Act* (16 U.S.C. 470aa-470ll; Public Law 96-95, ARPA), approved October 31, 1979 (93 Statute 721) largely supplanted the resource protection provisions of the *Antiquities Act of 1906* for archaeological items. ARPA establishes detailed requirements for issuance of permits for any excavation or removal of archaeological resources from Federal or Native American lands. It also establishes civil and criminal penalties for the unauthorized excavation, removal, or damage of those resources; for any trafficking in those removed from Federal or Native American land in violation of any provision of Federal law; and for interstate and foreign commerce if such resources were acquired, transported, or received in violation of any state or local law (Historic Preservation Acts).
- The *Archaeological and Historic Preservation Act* (16 U.S.C. 469-469c; Public Law 86-523), approved June 27, 1960 (74 Statute 220), as amended by Public Law 93-291, approved May 24, 1974 (88 Statute 174), carries out the policy established by the *Historic Sites Act* (see below). This Act directs Federal agencies to notify the Secretary of the Interior whenever they find that a Federal or federally assisted licensed or permitted project may cause the loss or destruction of significant scientific, prehistoric, or archaeological data. The act authorizes the use of appropriated, donated or transferred funds for the recovery, protection, and preservation of that data (Historic Preservation Acts).
- The *Historic Sites, Buildings, and Antiquities Act* (16 U.S.C. 461-462, 464-467; 49 Statute 666) of August 21, 1935, popularly known as the *Historic Sites Act*, as amended by Public Law 89-249, approved October 9, 1965 (79 Statute 971), declares it a national policy to preserve historic sites and objects of national significance, including those located on refuges. The Act provides procedures for designating, acquiring, administering, and protecting these sites and objects of national significance. Among other things, National Historic and Natural Landmarks are designated under the authority of this act (Historic Preservation Acts). In 1966, the National Park Service (NPS) designated Great Swamp NWR a registered National Natural Landmark under the provisions of the *Historic Sites Act of 1935*. The refuge was chosen for the registry as an "exceptional example of the natural history of the United States" (USFWS 1987).
- The *National Historic Preservation Act of 1966* (16 U.S.C. 470-470b, 470c-470n), Public Law 89-665, approved October 15, 1966 (80 Statute 915), and repeatedly amended, 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). This Act establishes an *Advisory Council on Historic Preservation*, which became a permanent, independent

agency in Public Law 94-422, approved September 28, 1976 (90 Statute 1319). The Act created the *Historic Preservation Fund*, which directs Federal agencies to take into account the effects of their actions on items or sites listed or eligible for listing on the National Register (Historic Preservation Acts).

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

Other Federal resource laws are also important to highlight as they are integral to developing a CCP. The *Wilderness Act of 1964* (16 U.S.C. 1131-1136; Public Law 88-577) establishes a NWPS that is composed of federally owned areas designated by Congress as “Wilderness Areas.” The Act directs each agency administering designated wilderness to preserve the “wilderness character” of areas within the National Wilderness Preservation System (NWPS), and to administer the NWPS for the “use and enjoyment of the American people in a way that will leave those areas unimpaired to future use and enjoyment as wilderness”. The Act also directs the Secretary of the Interior, within 10 years, to review every roadless area of 5,000 acres or more and every roadless island (regardless of size) within national wildlife refuges and units of the NPS for inclusion in the NWPS (Wilderness Act of 1964). FWS planning policy requires that we evaluate the potential for wilderness on refuge lands, as appropriate, during the CCP planning process. The *Great Swamp Wilderness Act of 1968* designated the eastern portion of the refuge, comprised of 3,660 acres, as Wilderness Area. The Great Swamp NWR wilderness was the first Wilderness Area designated within the Department.

The *Wild and Scenic Rivers Act of 1968*, as amended, selects certain rivers of the nation possessing remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, preserves them in a free-flowing condition, and protects their local environments (Wild and Scenic River Act of 1968). FWS planning policy requires that we evaluate the potential for wild and scenic rivers designation on refuge lands, as appropriate, during the CCP planning process.



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Although the *Endangered Species Act of 1973* (ESA) does not have specific application to the Refuge System, it does affect resource management activities within the Refuge System and intra-agency consultation in accordance with Section 7 of the ESA is conducted as a part of the CCP. The Act encourages the development of state programs and directs Federal agencies to take actions to ensure that actions they carry out, authorize, or fund do not jeopardize any endangered species or their critical habitat (Endangered Species Act of 1973). The Act also provides

the authority to acquire land for the conservation of listed threatened or endangered species, using Land and Water Conservation Fund (LWCF) monies.

The *Emergency Wetlands Resources Act of 1986* (Public Law 99-645; 100 Stat. 3582), approved on November 10, 1986, authorized the purchase of wetlands from LWCF monies, removing a prior prohibition on such acquisitions. The Act required the Secretary of the Interior to establish a *National Wetlands Priority Conservation Plan*, required the states to include wetlands in their *Comprehensive Outdoor Recreation Plans*, and transferred to the Migratory Bird Conservation Fund amounts equal to the import duties on arms and ammunition (Emergency Wetlands Resources Act of 1986).

In 1990, the FWS Northeast Region completed a *Regional Wetlands Concept Plan* to provide more specific information about wetlands resources in the Northeast. The plan identifies 850 privately owned wetland sites in 13 northeastern and Mid-Atlantic states that warrant consideration for acquisition using the LWCF. The plan is intended to provide guidance to focus acquisition efforts on vulnerable, scarce, and important wetlands in the Northeast Region (USFWS 1990). Appendix A of the *Regional Wetlands Concept Plan* consists of a list of these wetlands, organized by state, which were identified by the FWS and met the Wetlands Assessment Threshold Criteria. Although wetlands associated with Great Swamp NWR were not identified in appendix A, the list does not represent the only "important" wetland sites in the Northeast. Additionally, the absence of a wetland site in the list does not make it ineligible for acquisition using LWCF monies (USFWS 1990).

1.4 Conservation Plans and Initiatives Guiding the Proposed Action

1.4.1 U.S. Fish and Wildlife Service Migratory Bird Program Strategic Plan

The Migratory Bird Program completed a 10-year strategic plan in January 2004 (USFWS 2004a). The strategic plan seeks to conserve and manage migratory bird populations and their habitats, and refuges can provide high quality habitat for many migratory birds. Two strategies to achieve these goals are bird population monitoring and habitat management. Refuges contribute to these strategies by conducting biological surveys and managing habitat on a local scale. Great Swamp NWR will use, to the maximum extent practicable, standardized monitoring protocols and habitat assessments, thus contributing to regionwide assessments of population trends and habitat management effects on migratory birds.

1.4.2 U.S. Fish and Wildlife Service Birds of Conservation Concern (2008)

In 1988, an amendment to the Fish and Wildlife Conservation Act of 1980 (100 Public Law 100-653, Title VIII) mandated the FWS "to identify nongame migratory birds that, without additional conservation action, are likely to become candidates for listing under the Endangered Species Act of 1973" (USFWS 2008b). The overall goal of the Birds of Conservation Concern (BCC) report is to accurately identify migratory and non-migratory bird species, which are not currently designated as federally threatened or endangered, that are of highest conservation concern.

The BCC is derived from these major nongame bird conservation plans: Partners in Flight (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). The BCC encompasses three geographic scales: North American Bird Conservation Initiative (NABCI) Bird Conservation Regions (BCR), FWS Regions, and

Nationwide. Bird species included in the report include nongame birds, gamebirds without hunting seasons, subsistence-hunted nongame birds in Alaska, and ESA candidate, proposed endangered or threatened, and recently delisted species. Population trends, threat distribution, abundance, and relative density were all factors considered (USFWS 2008b). Great Swamp NWR is situated within USFWS Region 5 and BCR 29, and in close proximity to BCR 28 (see section 1.4.3 below).

This report is intended to stimulate coordinated and collaborative proactive conservation actions among Federal, state, tribal, and private partners. It is hoped that by focusing attention on these highest-priority species, this report will promote greater study and protection of the habitats and ecological communities upon which these species depend, thereby contributing to healthy avian populations and communities. The plan can be viewed at:

<http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf>

This is one of the plans we used in identifying species of concern in appendix A, and in the development of management objectives and strategies in Goals 1, 2 and 3.

1.4.3 North American Bird Conservation Initiative

NABCI brings together the landbird, shorebird, waterbird, and waterfowl plans into a coordinated effort to protect and restore all native bird populations and their habitats in North America. Conservation partnerships reduce redundancy in the structure, planning, and implementation of conservation projects. The Initiative utilizes BCRs to guide landscape scale, science-based approaches to conserving birds and their habitats (NABCI 2010a). Great Swamp NWR is situated within BCR 29, known as the Piedmont region. BCR 29 extends from northern New Jersey southwest to northeastern Alabama. The Piedmont is a transitional area located between the mountainous Appalachians and the flat coastal plain. This region contains a patchwork of pasture, woodlots, and suburban sprawl, which results in significant bird conservation challenges. Specific bird conservation plans for BCR 29 that apply to Great Swamp NWR include the *Partners in Flight Bird Conservation Plan for the Mid-Atlantic Piedmont* and the *North American Waterfowl Management Plan – Atlantic Coast Joint Venture Waterfowl Implementation Plan* (see below).

BCR 28, known as the Appalachian Mountains region, is situated approximately 7,300 feet northwest of Great Swamp NWR; therefore, priority bird species and habitats identified in this region should also be considered. BCR 28 extends from southern New York southwest to northeastern Alabama and includes the Blue Ridge, the Ridge and Valley region, the Cumberland Plateau, the Ohio Hills, and the Allegheny Plateau. The rugged terrain of this region is dominated by oak-hickory and other deciduous forest types at lower elevations and by various combinations of pine, spruce, hemlock, and fir in higher elevations. Although flatter areas are utilized for agriculture, a majority of this region is covered by forest. The Appalachian Mountain region contains several major rivers which are utilized by various waterfowl species during migration. Specific bird conservation plans for BCR 28 that apply to Great Swamp NWR include the *North American Waterfowl Management Plan – Atlantic Coast Joint Venture Waterfowl Implementation Plan* (see below).

1.4.4 Partners in Flight Landbird Conservation Plan: Physiographic Area 9, Southern New England, and Area 10, Mid-Atlantic Piedmont

PIF was established in 1990 due to increasing concerns for population declines in various species of land birds and to encourage the conservation of bird species not incorporated in existing conservation initiatives. Initially, PIF's focus was on neotropical migratory birds, specifically those species that breed in the Nearctic and winter in the Neotropics; however, its focus was later broadened to include most land birds and other species requiring terrestrial habitat. PIF is a joint effort involving partnerships among Federal, state, and local government agencies, conservation groups, professional organizations, industry, the academic community and private individuals. The three primary concepts underlying PIF's mission are (1) helping species at risk before they become imperiled, (2) keeping both resident and migratory native birds common in their natural ranges, and (3) encouraging voluntary partnerships for birds, habitats, and humans. PIF's goal is to focus resources on improving monitoring and inventory, research, management, and educational programs for birds and habitats in North America and the Neotropics (Ruth 2006).



William Bell

PIF utilizes Physiographic Areas to identify priority bird species and habitats in the United States, as well as to provide conservation recommendations and needs for each of these areas. Great Swamp NWR is situated within PIF Physiographic Area 9 (Southern New England) and PIF Physiographic Area 10 (Mid-Atlantic Piedmont). PIF Physiographic Area 9 encompasses portions of Maine, Massachusetts, New Hampshire, Connecticut, Rhode Island, New York, and New Jersey. This physiographic area identifies four priority habitat types, including grassland and agricultural fields, mature deciduous forest, early successional fields and pitch pine barrens, and maritime marsh, and 14 priority bird species, including American black duck and American woodcock (Dettmers and Rosenberg 2000). PIF Physiographic Area 10 encompasses portions of New Jersey, Pennsylvania, Maryland, Virginia, and West Virginia. This physiographic area identifies three priority habitat types, including deciduous and mixed forests, scrub-shrub and barrens, and agricultural grasslands, and 11 priority bird species, including the American woodcock (Kearney 2003).

We used both plans to identify species of concern in appendix A, and in the development of management objectives and strategies in Goals 1, 2, and 3.

1.4.5 North American Waterfowl Management Plan: Atlantic Coast and Appalachian Mountains Joint Venture Waterfowl Implementation Plans

The North American Waterfowl Management Plan (NAWMP), which was originally signed in 1986 by the United States and Canada and later by Mexico in 1994, was the first continental conservation plan developed in response to the significant decline in waterfowl populations observed during the mid-1980s (NAWMP 2004). The plan recognized the need for a collaborative effort to conserve wetlands and waterfowl habitats in North America to sustain and eventually restore waterfowl populations. The plan describes a 15-year strategy to restore and sustain waterfowl populations by protecting, restoring, and enhancing habitat. The plan committee, including representatives from each nation, has modified the 1986

plan twice to account for biological, sociological, and economic changes that influenced the status of waterfowl and the conduct of cooperative habitat conservation. The most recent modification (2004) updates the needs, priorities, and strategies for the next 14 years, increases stakeholder confidence in the direction of its actions, and guides partners in strengthening the biological foundation of North American waterfowl conservation (NAWMP 2004). The plan is currently being updated with a target date of 2011-2012 for completion (NAWMP 2009).

The NAWMP developed self-directed, regionally based partnerships known as joint ventures. These joint ventures were originally created for specific "Waterfowl Habitat Areas of Major Concern in the United States and Canada." Great Swamp NWR is located within the Atlantic Coast Joint Venture (ACJV). The ACJV encompasses 17 states in the Atlantic Flyway of the United States, extending from Maine south to the Commonwealth of Puerto Rico. The ACJV Waterfowl Implementation Plan further defines important geographic areas for waterfowl conservation in the ACJV, including focus areas and planning areas. Great Swamp NWR is partially located within a focus area designated as the Passaic River Basin. Although the primary focus of the ACJV is habitat conservation for waterfowl, the mission of the ACJV continues to evolve to include a more comprehensive method that emphasizes the conservation of all birds (ACJV 2009).

The Appalachian Mountains Joint Venture (AMJV) is located approximately 7,300 feet northwest of Great Swamp NWR; therefore, priority bird species identified for this region are considered in the Great Swamp Habitat Management Plan (HMP). The AMJV is dedicated to the conservation of all native bird populations and their habitats, consistent with major national and international bird conservation plans and the NABCI. The AMJV was originally established in 2003 as a BCR partnership. In 2006, the partnership launched actions to gain recognition, and ultimately to be declared a joint venture. The AMJV was formally recognized as a habitat joint venture by the Service in 2008. The AMJV Implementation Plan was submitted to FWS Division of Bird Habitat Conservation for review on May 30, 2008, and was approved in October 2008 (AMJV 2008).

1.4.6 U.S. Fish and Wildlife Service Strategic Plan for Responding to Accelerating Climate Change

According to the Intergovernmental Panel on Climate Change's (IPCC) *Fourth Assessment Report* (2007), "(w)arming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level... (m)ost of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations" (IPCC 2007). The global atmospheric concentration of carbon dioxide (CO₂), a major greenhouse gas, has increased approximately 35 percent since 1750, primarily due to human activity (IPCC 2007). In New Jersey, long-term data document an increase in average temperature and a rise in sea level that is consistent with observed and predicted global trends (NJDEP 2010). During the 20th century, average global temperatures have risen approximately 1 degree Fahrenheit and sea levels rose approximately 4 to 8 inches. Carbon dioxide emissions due to human activity are projected to further increase global temperatures by 2.5 degrees Fahrenheit to 10.4 degrees Fahrenheit over the period of 1990 to 2100. Global mean sea level is likely to rise an additional 4 to 35 inches over the same time period (NJDEP 2010). Rising ambient temperatures are expected to have direct and indirect impacts to human health, natural ecosystems, agriculture, and water supply in New Jersey (NJDEP 2010).

In response to accelerating climate change, FWS prepared a plan entitled "Rising to the Urgent Challenges of a Changing Climate: A Strategic Plan for Responding to Accelerating Climate Change in the 21st Century," which was finalized in September 2010 (USFWS 2010a). The goals and objectives of the Strategic Plan fall under three major strategies:

- **Adaptation** – *the use of management techniques and strategies, including reactive and anticipatory, to reduce impacts to fish, wildlife and habitats as a result of climate change.*
- **Mitigation** – *involves reducing the FWS "carbon footprint" by using less energy, consuming fewer materials, and altering land management practices with the ultimate intent to become carbon neutral by the year 2020.*
- **Engagement** – *reaching out to FWS employees; our local, national, and international partners in the public and private sectors; our key constituencies and stakeholders; and citizens to join forces with them in seeking solutions to the challenges and threats to fish and wildlife conservation posed by climate change (USFWS 2010a).*

The primary purposes of the plan are to present a vision for accomplishing the FWS mission in the face of accelerating climate change and to provide direction for our organization and its employees, defining our role within the context of the Department and the larger conservation community (USFWS 2010a).

1.4.7 National Invasive Species Management Plan and the New Jersey Strategic Management Plan for Invasive Species

Executive Order 13112 requires the National Invasive Species Council (Council) to produce a National Invasive Species Management Plan (Invasives Plan) every 2 years. In January 2001, the Council released the first Invasives Plan, which serves as a blueprint for all Federal action on invasive species. Collaboration between the Council and the *Fulfilling the Promise* team, also known as the National Invasive Species Management Strategy Team, furthered the Invasives Plan to focus on invasive species control and management efforts in the Refuge System. This National Strategy, developed in 2003, provides precise guidance to Regional and field offices, and identifies four primary goals, including (1) increase awareness; (2) reduce impacts to refuge habitats; (3) reduce impacts to neighboring lands; and (4) utilize and develop new integrated pest management approaches (USFWS 2003a). The Invasives Plan focuses on those non-native species that cause or may cause significant negative impacts and that do not provide an equivalent benefit to society.

The New Jersey Strategic Management Plan for Invasive Species sets forth recommendations pursuant to New Jersey Executive Order #97, which created the New Jersey Invasive Species Council (NJISC) with the responsibility of completing a comprehensive invasive species management plan for the State of New Jersey. NJISC's vision statement is "*to reduce the impacts of invasive species on New Jersey's biodiversity, natural resources, agricultural resources and human health through preservation, control and restoration, and to prevent new invasives species from becoming established.*" The mission of NJISC is to provide coordination and guidance for invasive species activities throughout the State and to act as a liaison for regional and national cooperative efforts. The plan provides a "blueprint" for a cooperative effort among stakeholders to put into practice the actions needed to reduce and manage the invasive species problem in the State.

1.4.8 The Nature Conservancy Eco-Regional Plan

The Nature Conservancy has delineated the continental United States into 63 ecoregions, which are large geographic areas that share similar geologic, topographic, ecological, and climatic characteristics. These ecoregions are a modification of the U.S. Forest Service's "Bailey System." Great Swamp NWR is located within the Lower New England/Northern Piedmont (LNE/NP) Ecoregion. This ecoregion extends from southern Maine to northern Virginia, and includes 12 states and the District of Columbia. This ecoregion is characterized by extensive low-relief plains, with low mountains in the north and rolling hills in the south. The till covered north includes glacial features such as former lake basins, eskers and drumlin fields, as well as numerous streams, small lakes, and wetlands (Barbour 2003).

The goal of the LNE/NP Ecoregional Planning Team is to "maintain the long-term viability of all native plant and animal species and examples of all natural communities across their natural ranges of occurrence and variation within the ecoregion while maintaining the natural processes critical to ensuring long-term ecological integrity" (Barbour 2003). Particularly, the conservation objectives adopted by the planning team are:

- To ensure the continued existence of the matrix communities found in the ecoregion and restore the natural processes, including succession, to promote the development of mature (old growth) stands;
- To protect multiple viable examples of all the region's natural communities through the development of a portfolio of conservation areas. The examples should represent the range of variability found within each of the communities in the ecoregion;
- To incorporate into the portfolio viable examples of all declining, disjunct, or otherwise vulnerable species, with the goal of protecting multiple viable populations of each species in the variety of habitats and ecological contexts in which it naturally occurs; and
- To protect the full array of aquatic species found within the ecoregion.

The LNE/NP Ecoregion is further classified into subregions and subsections. Eighteen subsections have been characterized within the ecoregion, each of which was utilized in the planning process to set geographic distribution goals for species targets (Barbour 2003). The Great Swamp NWR is located within the Northern Piedmont Subregion and the Gettysburg Piedmont Lowland Subsection (221Da).

1.4.9 Significant Habitats and Habitat Complexes of the New York Bight Watershed

The FWS Southern New England-New York Bight Coastal Ecosystems Program prepared this report for the purpose of assessing the status of regionally significant native fish, wildlife, and plant populations and their essential habitats in the New York Bight region, especially those requiring immediate or long-term protection, conservation, enhancement and/or restoration (USFWS 1997a). The study also determined, delineated and described specific habitats or habitat complexes of regional importance or significance. Significance of a site or resource refers to its "relative regional importance to one or more life history stages or seasonal use periods of Federal or State trust species and other species of special emphasis or concern" (USFWS 1997a). The FWS worked closely with resource agencies of New York and New Jersey, including fish and wildlife agencies and endangered, non-game, and natural heritage programs, to develop target species lists for each state and to compile comprehensive list of species of special emphasis specific

to the watershed as a whole (USFWS 1997a). The list of species of special emphasis developed for the New York Bight study area includes 114 species of invertebrates; 232 species of birds; 31 species of amphibians and reptiles; 38 species of mammals; 99 species of fish; nearly 500 species of plants; and 82 natural communities (USFWS 1997a). These species include a number of focus groups of Federal and State trust species in the Bight.

Great Swamp NWR is located in the southwest portion of the Passaic Meadows Habitat Complex (Complex #24), which is situated within the Piedmont Lowlands Physiographic Region (Northern Triassic Lowlands) of the New York Bight watershed. The wetlands within this complex support regionally significant populations of fish and wildlife, and are particularly significant for seasonal concentrations of waterfowl and waterbirds (USFWS 1997b). The New Jersey Natural Heritage Program recognizes four Priority Sites of Biodiversity within the habitat complex, including Great Swamp, all of which have a biodiversity rank of B4 (moderate biodiversity significance) (USFWS 1997b). This report also identifies threats and special problems, as well as conservation recommendations, for this habitat complex.

1.4.10 National Fish Habitat Action Plan

The National Fish Habitat Action Plan (NFHAP) was originally prepared in 2001 through the Association of Fish and Wildlife Agencies (AFWA) and in collaboration with FWS, the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service and other key partners. The mission of the NFHAP is to protect, restore and enhance the nation's fish and aquatic communities through the establishment of Fish Habitat Partnerships (NFHAP 2006). The NFHAP set a goal of developing at least 12 strong partnerships, similar to scale as the NAWMP. Fish Habitat Partnerships are established around important aquatic habitats and distinct geographic areas, keystone fish species, and/or system types. In 2010, 17 Fish Habitat Partnerships are established and working, while four candidate partnerships are awaiting formal recognition (NFHAP 2010). Great Swamp NWR is situated within the Eastern Brook Trout Joint Venture (EBTJV), which was formally established in 2005 and encompasses 17 states from Maine to northern Georgia. The management priorities of EBTJV's Mid-Atlantic Region, which includes northern New Jersey, Pennsylvania, Maryland, West Virginia, and Ohio, are as follows (Eastern Brook Trout Joint Venture, 2010):



Kathy Reullinger

- Protect the 23 intact watersheds remaining;
- Improve water quality;
- Promote and restore riparian forest; and
- Remove and prevent exotic fish.

Development in the Mid-Atlantic Region has resulted in warmer water temperatures due to the loss of forest shading along streams, heated runoff from paved surfaces, over-widening of streams, and loss of physical habitat and cover in streams (Eastern Brook Trout Joint Venture, 2010). EBTJV's "Conserving the Eastern Brook Trout: Action Strategies" report (2008) provides rangewide, regional, and state-level goals, objectives, and strategies designed to achieve the overall principle goals of the EBTJV.

1.4.11 New Jersey Wildlife Action Plan

In November 2001, Congress signed the Department of the Interior and Related Agencies Appropriations Act of 2002, which established the State Wildlife Grants (SWG) program. The SWG program provides funds to state wildlife agencies for the conservation of fish and wildlife and their habitats. The program required that each state develop a Comprehensive Wildlife Conservation Strategy by October 1, 2005 in order to qualify for and ensure future Federal grant funding (NJDEP 2008a). The 2002 Act was later replaced by the 2007 Administrative Guidelines for SWG due to emerging issues that would require additional review and because the original guidelines became obsolete (USFWS 2006d).

The New Jersey Division of Fish and Wildlife (NJDFW), in collaboration with the general public, New Jersey conservation groups, and other stakeholders including the FWS, developed the New Jersey Wildlife Action Plan (NJWAP) for the conservation of the State's species of greatest conservation need. This plan, formerly known as the Comprehensive Wildlife Conservation Strategy, was originally submitted on October 1, 2005; however, due to a limited public comment period, the plan received conditional approval and was later resubmitted to the FWS on August 4, 2006. Since then, several revisions have occurred for clarification and enhancement to ensure necessary conservation objectives are not overlooked. The most recent version is dated January 23, 2008 (NJDEP 2008a).

The NJWAP identifies Great Swamp NWR as a "significant natural area" in New Jersey (NJDEP 2008a). To better assess conservation needs, goals, and priorities, the NJWAP uses the five ecoregions and 26 conservation zones already identified in the New Jersey Department of Environmental Protection (NJDEP) Landscape Project (NJDEP 2008b). Great Swamp NWR lies within the Piedmont Plains ecoregion and the Northern Piedmont Plains conservation zone. Of the nearly 200 species identified as Wildlife of Greatest Conservation Need in the NJWAP, 90 species are known to occur within Great Swamp NWR and two have been extirpated but are potential candidates for reintroduction (sedge wren and ruffed grouse). In addition to sensitive species, the NJWAP identifies habitat needs and priorities for each ecoregion and conservation zone. Forests are identified as a high priority for the Northern Piedmont Plains conservation zone. Great Swamp NWR has the largest forested patch in this conservation zone. In addition, Great Swamp NWR also has significant areas of forested, scrub-shrub and emergent wetlands that serve as habitat for a variety of birds, reptiles, and amphibians, including the federally listed threatened bog turtle.

1.4.12 Partners in Amphibian and Reptile Conservation, National State Agency Herpetological Conservation Report (Draft 2004)

Partners in Amphibian and Reptile Conservation (PARC) was created in response to the increasing, well-documented national declines in amphibian and reptile populations. Many consider it the most comprehensive effort in herpetofaunal conservation. PARC members come from state and Federal agencies, conservation organizations, museums, the pet trade industry, nature centers, zoos, the power industry, universities, herpetological organizations, research laboratories, forest industries, and

environmental consultants. Its five geographic regions – Northeast, Southeast, Midwest, Southwest, and Northwest – can focus on national and regional challenges in herpetofaunal conservation. Regional working groups allow for region specific communication. The Northeast working group has developed “Model State Herpetofauna Regulatory Guidelines,” which provides specific habitat management prescriptions for the benefit of different taxonomic groups of herpetofauna (NEPARC 2010a). In addition, the working group also developed a “Northeast Amphibian and Reptile Species of Regional Responsibility and Conservation Concern” report (NEPARC 2010b). These guidance documents were consulted during the development of strategies for this CCP.

The National State Agency Herpetological Conservation Report (NHCR) is a draft summary report (PARC 2004) sponsored by PARC that provides a general overview of each state wildlife agency's support for reptile and amphibian conservation and research through September 2004. The report identifies amphibian and reptile species of concern for each state. Each state report was compiled in cooperation with its agency's lead biologist on herpetofaunal conservation. The purpose of the report is to facilitate communication among state agencies and partner organizations throughout the PARC network to identify and address regional and national herpetological priorities. The report can be accessed at <http://www.parcplace.org/documents/PARCNationalStates2004.pdf>.

PARC intends to expand the scope of the NHCR to include other states, provinces, and territories. It will include other state agencies that are supporting herpetological conservation and research, such as transportation departments, park departments, and forest agencies. The next NHCR report will integrate a list of the Species of Conservation Concern into each state's comprehensive conservation wildlife strategy.

1.4.13 Bog Turtle Northern Population Recovery Plan

Public Law 100-478 (102 Stat 2306), enacted in October 1988 under the ESA, requires the Secretary of Interior to develop and review recovery plans for listed species, unless such a plan would not promote the conservation of a particular species (USFWS 2008c). The northern population of the bog turtle was listed as a federally threatened species in November 1997. As a result, the Bog Turtle Northern Population Recovery Plan was developed and later approved on May 15, 2001. 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.

To facilitate recovery, the northern population is divided into five recovery units and their subunits. The Great Swamp NWR bog turtle population lies within the Hudson River/Housatonic Unit, Hudson River Watershed Subunit. Four recovery criteria were established to set the threshold for determining when the recovery objective has been met. Those criteria pertain to population and habitat goals, monitoring programs, illicit trade, and habitat management. One criterion for the Hudson River Watershed Subunit is to protect at least 10 viable bog turtle populations and sufficient habitat to ensure they can be sustained. In addition to listing goals and criteria and describing bog turtle ecology and life history, the Recovery Plan identifies nine specific recovery tasks. The tasks are specific actions that, when fully implemented, should lead to meeting the recovery objective. Refuge staff will contribute to the following recovery tasks on the Great Swamp NWR, within their authority and in cooperation with the recovery team:

- 1) Protect known and extant populations and habitat using 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) Manage bog turtle populations at extant sites, where necessary.
- 8) Conduct an effective law enforcement program to halt illicit take and commercialization of bog turtles.
- 9) Develop and implement an effective outreach and education program about bog turtles (USFWS 2001b).

1.4.14 Indiana Bat Recovery Plan

In 1967, the FWS listed the Indiana bat as federally endangered due to significant population declines documented at their seven major hibernacula in the Midwest. At the time of their listing, the Indiana bat population was approximately 883,300 (USFWS 2007a). Surveys conducted in 2007 estimated the rangewide population at approximately 468,184. Winter surveys conducted in 2007 at known Priority 1 and 2 hibernacula sites in New Jersey estimated the population at 659 (USFWS 2008d). As of October 2006, FWS had records of existing winter populations at approximately 281 hibernacula in 19 states and 269 maternity colonies in 16 states (USFWS 2007a). In 1992, Indiana bats were found hibernating in three areas near Hibernia, New Jersey. Great Swamp NWR confirmed the occurrence of maternity colonies in 2005.

Similar to the original recovery plan, the 2007 Revised Draft Indiana Bat Recovery Plan continues emphasize protection of hibernacula, but also increases the focus on summer habitat and proposes use of four Recovery Units: Ozark-Central, Midwest, Appalachian Mountains, and Northeast. Great Swamp NWR is located within the Northeast Recovery Unit and within the Eastern Broadleaf Forest Ecoregion Division (USFWS 2007a).

The primary goal of the recovery plan is to reclassify the Indiana bat to federally threatened, with an ultimate goal of removing the species from the Federal list of threatened and endangered wildlife. The reclassification of the Indiana bat will be attained through the achievement of the following objectives: (1) permanent protection of 80 percent of Priority 1 hibernacula; (2) a minimum overall population number equal to the 2005 estimate (457,000); and (3) documentation of a positive population growth rate over five sequential survey periods. Similarly, delisting of the Indiana bat will be attained by addressing the following: (1) permanent protection of 50 percent of Priority 2 hibernacula; (2) a minimum overall population number equal to the 2005 estimate; and (3) continued documentation of a positive population growth rate over an additional five sequential survey periods (USFWS 2007a).

During the winter of 2006-2007, the first documented case of White-Nose Syndrome (WNS) was reported in New York. WNS is characterized by the colonization of a psychrophilic, or "cold-loving," fungus on the muzzle, ears, and flight membranes of hibernating bats (Blehert, et al., 2008); however, the presence of the fungus is typically only observable on approximately half of bats affected. The fungus has been identified

as *Geomyces destructans*. Affected bats may exhibit low body weights and abnormal behaviors, including early emergence from hibernation and movement to colder areas of caves. WNS quickly spread to hibernacula of several other New England states the following winter. During the time from 2008 to 2009, the syndrome spread as far south as Virginia and included the states of New Jersey and Pennsylvania. Since it was first documented, WNS has been confirmed in 20 states and 4 Canadian provinces (USFWS 2012d). WNS has been confirmed in states as far west as Oklahoma. More than 5.5 million hibernating bats have died since WNS was documented in 2006 (USFWS 2012d). In some hibernacula (caves or mines where bats hibernate in winter), approximately 90 to 100 percent of bats are dying (USFWS 2010c). The majority of bats dying in the Northeast have been little brown bats (*Myotis lucifugus*); however, WNS has also affected tri-colored (*Perimyotis subflavus*), Northern long-eared (*Myotis septentrionalis*), big brown (*Eptesicus fuscus*), Eastern small footed (*Myotis leibii*), and Indiana bats (USFWS 2010c).

In 2009, WNS was confirmed in five hibernacula in New Jersey, including Hibernia mine, both Mount Hope mines, and Upper and Lower Copper mines (NJDEP 2009a). Data suggests that at least some of the refuge's Indiana bats winter in Hibernia and Mount Hope mines (Kitchell 2011). A majority of the bats hibernating in Hibernia mine are little brown bats, with lesser amounts of Indiana bats and Northern long-eared bats (Valent 2011). Visual signs of the fungus and behavioral changes were observed in Hibernia mine in January 2009 and mortality was evident from March to April 2009 (Valent 2011). In February 2010, NJDFW estimated 93 percent mortality in Hibernia mine (Valent 2011). The presence of WNS in New Jersey has resulted in at least a 50 percent decline in *Myotis* species (Valent 2011). Potential declines were documented at the refuge post-WNS; however, detecting WNS-related impacts on the maternity colony is extremely difficult in absence of substantial baseline data and significant mist netting survey efforts. Data collected at the refuge between 2006 and 2010 indicates that peak emergence counts showed a potential decline in Indiana bat colony size. Although few bats showed evidence of wing scarring, significant changes in both the bat population and in the proportion of reproductive females were evident following the onset of WNS. Survey results also indicated substantial declines in little brown bat populations; declines in Indiana bat and Northern long-eared bat populations; and significant increases in big brown bat populations after the onset of WNS (Kitchell and Wight undated).

A comprehensive understanding of WNS is essential for the development of management strategies for this threat to bats in the Northeastern United States (Blehert, et al., 2008).

1.4.15 American Woodcock Conservation Plan

Since surveys were first implemented in the mid-1960s, significant declines in both the central and eastern populations of American woodcock have been observed. Population declines are thought to be a result of early successional forest habitat loss and degradation. Long-term trends indicate that woodcock population declines for the Eastern region are 1.9 percent per year (Woodcock Task Force et al., 2008). In the parts of the Piedmont region (BCR 29) that are covered by the Singing-Ground Survey (Virginia, Maryland, Pennsylvania, and New Jersey), there have been long-term declines (1968-2004) of 3.25 percent per year for breeding woodcocks (Palmer 2008). The largest decline in singing males was recorded in New Jersey at 83 percent (population estimates: 1970-75 = 5,243; current = 909) (Palmer 2008).

The 2008 American Woodcock Conservation Plan documents woodcock population trends from the early 1970s through 2005 and provides landscape-level habitat management recommendations. The goal of this plan is to prevent further decline of woodcock populations and to eventually achieve positive population growth (Woodcock Task Force et al., 2008). According to the plan, 203,698 acres of manageable early

successional habitat must be created and/or maintained in New Jersey to provide suitable woodcock habitat, to eliminate the population deficit (4,334 singing males), and to return densities to those observed during the early 1970s (Palmer 2008).

1.4.16 Other Information Sources

The following plans and resources were also consulted as we refined our management objectives and strategies, especially those with a local context.

Continental or National Plans

- U.S. Geological Survey National Wetlands Research Center Strategic Plan: 2010-2015 (USGS 2010); available at <http://www.nwrc.usgs.gov/about/5-year-plan.htm>.
- National Audubon Society Watchlist (Audubon Society 2007); available at <http://birds.audubon.org/2007-audubon-watchlist>.

Regional Plans

- U.S. Fish and Wildlife Service Region 5 Strategic Plan, Fiscal Year 2007 to 2011, Partners for Fish and Wildlife Program, Coastal Program (USFWS 2007b); available at http://www.fws.gov/partners/Strategic_Plans/Regions/Final_rR5_Partners_and_Coastal_Strategic_Plan%20.pdf.
- Ducks Unlimited International Conservation Plan–Mid-Atlantic Coast (Ducks Unlimited 2005); available at <http://www.ducks.org/conservation/conservation-plan/international-conservation-plan>.

State Plans

- New Jersey Landscape Project, New Jersey Endangered and Nongame Species Program (Niles *et al.*, 2008); available at <http://www.state.nj.us/dep/fgw/ensp/landscape/>.
- 2008-2012 New Jersey Statewide Comprehensive Outdoor Recreation Plan (NJDEP 2007a); available at <http://www.nj.gov/dep/greenacres/pdf/scorp.pdf>.
- New Jersey State Development and Redevelopment Plan–Final Draft (New Jersey State Planning Commission 2010); available at <http://www.nj.gov/dca/divisions/osg/>.

Local Plans

- Great Swamp Watershed Management Plan (Browne 1997); available at <http://www.greatswamp.org/Education/WatershedPlan.htm>.

1.5 Refuge Establishment, History and Purpose

In 1959, the Port Authority of New York and New Jersey announced plans to consider Great Swamp as a potential site for a commercial jet airport. As a result of major opposition, local citizens formed the Great Swamp Committee of the North American Wildlife Foundation, and through a national campaign, raised 1 million dollars to acquire nearly 3,000 acres. The Foundation began acquiring these lands in 1960 with the intention to donate this area to the United States. Great Swamp NWR was established by an act of Congress on November 3, 1960 and formally dedicated in 1964, primarily under the authorities of the Migratory Bird Treaty Act of 1918 (16 USC 703-711) and the Migratory Bird Conservation Act of 1929 (USC 715-715s, 45 Stat. 1222) as amended, for the following purpose:



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"...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds".

Based upon land acquisition documents and authorities, additional refuge purposes were identified as follows:

"...suitable for (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." (16 U.S.C. 460k-1, Refuge Recreation Act);

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

As stated in a letter, dated 1962, from FWS Director Daniel H. Janzen to U.S. Congressman, Peter H.B. Frelinghuysen, Jr. of the New Jersey Fifth Congressional District, which covered most of Morris County:

"The major objective of this refuge, other than to provide protection and preservation of the migratory waterfowl resource, is to provide an outdoor laboratory which will permit the people of the heavily populated surrounding area to engage in the above pursuits" (USFWS 1987).

Personal communication with refuge staff and review of available records support that all tracts of land were acquired under the primary purposes of Great Swamp NWR. Any potential conflicts are researched and resolved by a FWS Solicitor prior to acquisition. No existing land acquisition uses conflicting with the refuge's purposes were identified.

1.6 Refuge Administration

The refuge staff currently consists of the following permanent positions: a Wildlife Refuge Manager; Deputy Wildlife Refuge Manager; Contaminants Biologist; Wildlife Biologist; Visitor Services Manager; Visitor Services Specialist; Engineering Equipment Operator; Land Management Law Enforcement Officer; and Maintenance Worker. The refuge also includes one temporary staff: an administrative assistant. The refuge also partially funds a temporary Fish and Wildlife Biologist stationed at Wallkill River NWR who also works at Great Swamp and Cherry Valley NWRs. An Administrative Officer located at Wallkill River NWR provides part-time support to Great Swamp NWR for budget, bill paying, purchases, and payroll.

1.7 Refuge Operational Plans ("Step-Down" Plans)

The FWS Manual's "Refuge Planning Policy" (Part 602, chapter 4) lists more than 25 step-down management plans that are generally required on refuges. Those plans contain specific strategies and implementation schedules for achieving refuge goals and objectives. Some plans require annual revisions, while others require revision every 5 to 10 years. Some require additional NEPA analysis, public involvement, and compatibility determinations before they can be implemented.

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

- Annual Wetlands & Water Management Program for Managed Wetlands (completed 2003).
- Upland Habitat Management Plan [completed 1988; will be superseded by the upcoming HMP.
- Wildlife Inventory Plan (completed 1987; to be updated after HMP and CCP completion).
- Wildland Fire Management Plan (updated in 2008).
- Deer Hunting Plan [updated in 2009 (draft)]
- Annual Deer Hunting Program (completed 2011).
- Chronic Wasting Disease Surveillance and Contingency Plan (completed 2008).
- Migratory Bird Disease Contingency Plan (completed 2003).
- Animal Control Management Plan (completed 1990).
- Disease Contingency Plan (year?).

The following plans are to be completed for the Great Swamp NWR:

- An HMP, immediately following CCP approval.
- A Wilderness Stewardship Plan, within 2 years of CCP approval.
- Visitor Services Plan (VSP), within 2 years of CCP approval.
- Fire Management Plan (FMP), within 5 years of CCP approval.
- Operation and Maintenance Plan, within 5 years of CCP approval.
- Hunting Plan, within 1 year of CCP approval.
- Population Management Plan, within 10 years of CCP approval.
- Law Enforcement Plan, within 5 years of CCP approval.

See section 3.1.1 for additional details regarding developing refuge step-down plans.

1.8 Refuge Vision Statement

Our planning team has developed this vision statement to provide a guiding philosophy and sense of purpose in the CCP.

Great Swamp National Wildlife Refuge is a rich natural oasis immersed within the bustling New Jersey-New York metropolitan area. At Great Swamp migrating birds feed and rest amongst whispering trees while butterflies flutter through wildflower-laced meadows. Turtles bask in the warm summer's sun, as the drum of a red-headed woodpecker echoes across an expansive marsh. Barred owls break the evening silence with unmistakable calls from deep within the forest while frogs chorus in excited trills and croaks in the wet meadows. These sights and sounds are the very same ones that were heard by the Lenape Tribes centuries before.

Great Swamp is an ecological treasure that invites people to engage with the natural world in ways that are educational, memorable, and rewarding. Visitors are refreshed by the beauty, peace and solitude of this wild and natural setting, where wildlife comes first. Vital partners continue working together to protect the Great Swamp and its watershed to ensure its myriad of benefits for future generations.

1.9 Refuge Goals

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

Goal 1: Provide high quality diverse freshwater emergent wetlands with naturally varying hydric regimes, including wet meadows, freshwater emergent marsh, and open water wetland habitats dominated by native plants for migratory birds, endangered and threatened species, and priority conservation species.

Goal 2: Create and maintain an interspersed of scrub-shrub, grassland and successional wet meadows comprised of native vegetation at various successional stages to enhance breeding and foraging habitat for priority species on conservation concern.

Goal 3: Maintain a mosaic of wetland and upland forest, consisting of native understory species of varying densities and structure, to maximize the potential utilization by priority resources of concern.

Goal 4: Provide opportunities for visitors of all ages and abilities to enjoy wildlife-dependent recreation, appreciate the cultural and natural resources of Great Swamp National Wildlife Refuge, and increase their understanding and support of the refuge's mission.

Goal 5: Collaborate with the local community and partners to complement biological and visitor services programs on the refuge and throughout the watershed.

1.10 The Comprehensive Conservation Planning Process

FWS Policy (602 FW 3) establishes an eight-step planning process that also facilitates compliance with NEPA (see figure 1-1 below). The full text of the policy and a detailed description of the planning steps can be viewed on the Web at <http://policy.fws.gov/602fw3.html>. We followed the process depicted in the figure below in developing this CCP.

Our refuge planning began informally in 2008 to become familiar with the planning process and to start collecting information on refuge resources and public use. Subsequently, we initiated State and Tribe involvement in September 2008. An initial strategy meeting between the refuge staff and Regional Office staff was held at the refuge in July 2009. We assembled our core planning team, which consists of refuge staff, Regional Office staff, and a representative from the NJDFW. One major outcome of this meeting was a timetable for accomplishing the major steps in the planning process.

In July 2010, our public scoping period began. We mailed approximately 500 copies of the initial CCP planning announcement newsletter to local conservation and interest groups; research organizations; local, State and Federal government agencies; federally recognized Tribes; and interested individuals. We also posted the July newsletter on the refuge's website to reach a broader audience. Announcement of the CCP/EA was published in the Federal Register on July 19, 2010 (Volume 75, Number 137). We also held two public scoping meetings at the Chatham Township Municipal Building on July 28, 2010 at 1 and 6. These meetings were advertised in news releases, our first newsletter, and local bulletin boards. A total of 31 attendees, including six organizations, participated in the public scoping meetings. A total of 21 written comments from both individuals and organizations were received, including seven comments via email and 14 comments via standard letter or comment card. Public comments included concerns and suggestions on maintenance, public use and access; natural resource management; endangered and threatened species; hunting and animal welfare; and regional or global environmental issues, including water quality, air quality and global warming. These comments influenced the development of issues and alternatives in the draft CCP/EA.

In September 2010, our core planning team was expanded to include Amy S. Greene Environmental Consultants, Inc. (Flemington, New Jersey).

In October 2010, the U.S. Geological Survey (USGS) began conducting a visitor survey at the refuge, which included two sampling periods, one of which was completed in the fall of 2010 and the other in the spring of 2011. The survey is designed to help us gain further insight into visitors' desires and concerns regarding public use opportunities and facilities at Great Swamp NWR. A total of 336 visitors agreed to participate in the survey during the two sampling periods. In all, 219 visitors completed the survey for a 67 percent response rate and ± 5 percent margin of error at the 95 percent confidence level.

In January 2011, we released a second planning update newsletter to everyone on our mailing list. This update summarized the public comments we had received from meetings and by mail, and provided an update on the progress of the CCP planning process.

In March 2011, we hosted a 2-day alternatives workshop to discuss ideas, issues, and opportunities for the refuge as part of the planning process, with one day focusing on ecosystems and natural resources and the other focusing on public use and visitor services. Participants of the ecosystems and natural resources workshop included the core planning team, other refuge staff, and representatives from the Natural Resources Conservation Service, Friends of Great Swamp NWR, The Nature Conservancy, and The Land Conservancy of New Jersey. Participants of public use and visitor services workshop included the core planning team, other refuge staff, and representatives from the Somerset County Park Commission Environmental Education Center, The Raptor Trust, Friends of Great Swamp NWR, NPS Morristown National Historical Park, Alliance of New Jersey Environmental Education, and American Museum of Natural History. Comments from the workshops were carefully considered in the development of the CCP.

In February 2012, we distributed our third planning update newsletter. This newsletter provided a status update on the CCP planning process, a summary of draft alternatives, an updated vision statement, and a planning timeline.

In June 2012, we submitted the draft CCP/EA to the FWS Regional Office for review.

We will evaluate our accomplishments under the CCP each year. If future monitoring or new information results in the prediction of a significant impact, it will require further analysis.

1.11 Issues, Concerns, and Opportunities

We define an issue as "*any unsettled matter requiring management decision.*" That can be an "*initiative, opportunity, resource management problem, threat to a resource, conflict in use, or a public concern.*" Issues arise from many sources, including our staff, other FWS programs, state agencies, other Federal agencies, our partners, neighbors, user groups, or Congress. The following summary provides a context for the issues that arose during the planning process.

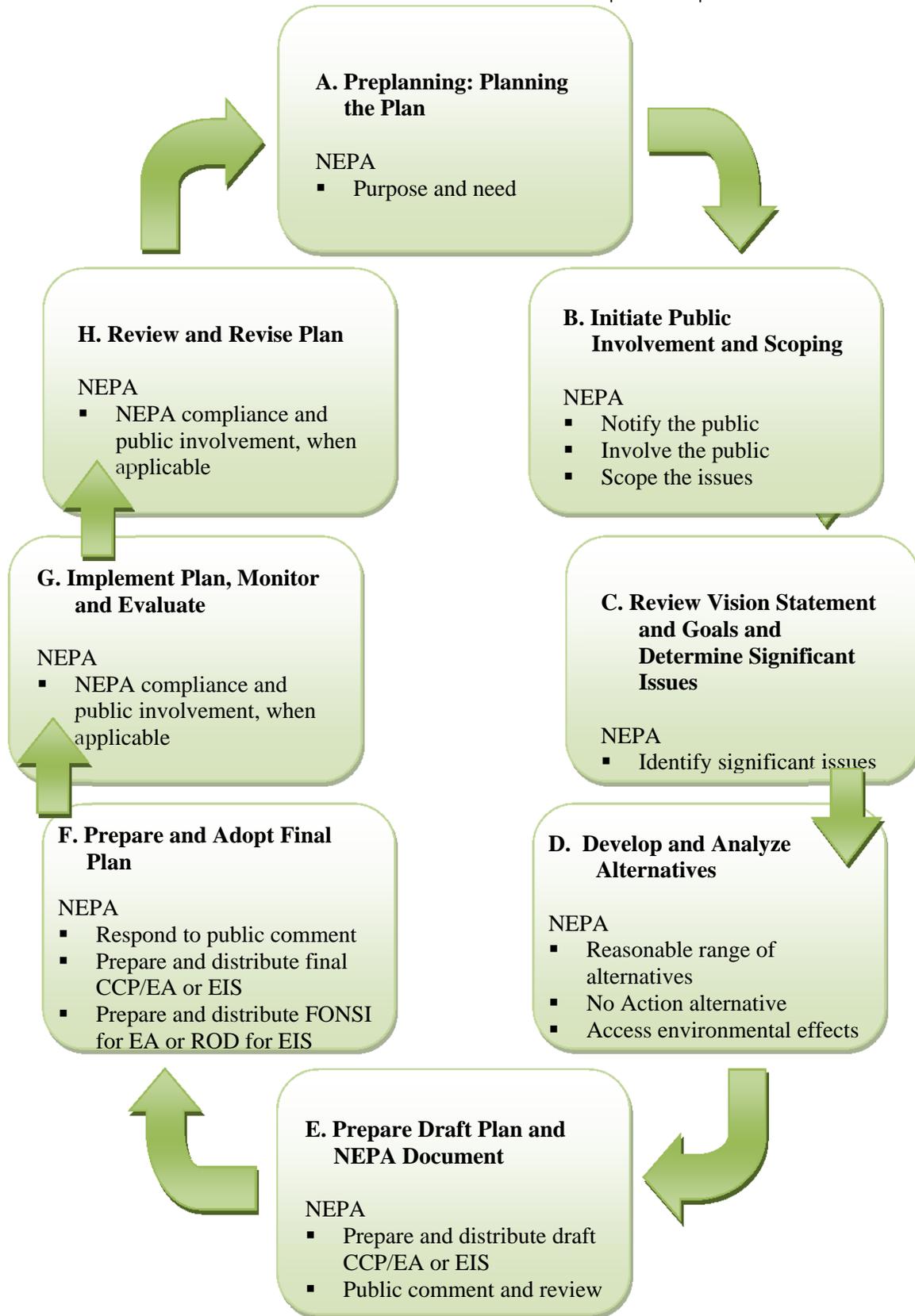


Figure 1-1: The Comprehensive Conservation Planning Process and its Relationship to the NEPA.

Habitat and Species Management

- How to manage and maintain habitat for priority species, such as waterfowl.
- How to balance management of and maximize the benefits from various habitat types, including opportunities to improve grassland bird habitat.
- How to best manage habitat for endangered and threatened species.
- How to prioritize invasive species management.

Public Use

- How to expand outdoor education opportunities, including opportunities to connect with regional urban populations.
- Whether or not to expand the trail system.
- How to achieve additional public outreach and connect with local populations that are not currently engaged with the refuge.
- Where there may be opportunities to improve wildlife viewing opportunities, especially waterfowl.
- Whether or not to expand existing hunting programs, including opportunities for additional hunted species or methods.

Regional Issues

- How can refuge management continue improve water quality in the region.
- What role does the refuge play in regional hydrology
- Identify/address climate change concerns impacting the refuge.

1.12 Decisions to be Made

The FWS Region 5 Regional Director will make the final determination of a preferred alternative to serve as the CCP for Great Swamp NWR. This final determination will be based on the FWS and Refuge System missions, the purposes for which the refuge was established, other legal mandates, and public and partner responses to this draft CCP/EA. The alternative selected could be the preferred alternative in the draft CCP/EA, the no action alternative, or a combination of actions or alternatives presented. The final decision will identify the desired combination of species protection, habitat management, public use and access, and administration for the refuge.

The FWS determined that an EA would be a more appropriate document than an environmental impact statement (EIS) to accompany the CCP. The need to prepare an EIS is a matter of professional judgment requiring consideration of all issues in question. If the EA determines that the CCP will constitute a major Federal action significantly affecting the quality of the human environment, an EIS will then be prepared. If not, a finding of no significant impact (FONSI) is prepared that briefly describes why the proposed action will not have a significant effect on the human environment. The FONSI would also certify that we have met agency compliance requirements and that the CCP, when implemented, will achieve the purposes of the refuge and help fulfill the Refuge System mission. Once the Regional Director has signed the FONSI and we have completed the CCP for the refuge, we will notify the public in the Federal Register and implementation can begin.