

Appendix C



Compatibility Determinations

- Wildlife Observation and Photography, Environmental Education and Interpretation
- Deer Hunting
- Turkey Hunting
- Special Birding Events
- Alternative Forms of Transportation
- Snowshoeing and Cross-Country Skiing
- Dog Walking
- Educational and Commercial Photography and Filming
- Wildlife Research
- Police and Fire Training
- National Weather Service Sensor

COMPATIBILITY DETERMINATION

USE

Wildlife Observation, Photography, Environmental Education, and Interpretation

REFUGE NAME

Great Swamp National Wildlife Refuge

DATE ESTABLISHED

1960

ESTABLISHING AND ACQUISITION AUTHORITY

Great Swamp National Wildlife Refuge (refuge) was established primarily under the authorities of the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711, 40 Stat. 755) and the Migratory Bird Conservation Act of 1929 (16 U.S.C. 715-715r, 45 Stat. 1222), as amended, by transfer of approximately 2,900 acres of land donated to the Federal Government by the Great Swamp Committee of the North American Wildlife Foundation.

REFUGE PURPOSES

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

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” (Migratory Bird Conservation Act of 1929; 16 U.S.C. 715d)

“...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 ...” (Refuge Recreation Act; 16 U.S.C. 460k-1) *“the Secretary...may accept and use...real...property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors”* ... (Refuge Recreation Act; 16 U.S.C. 460k-2, as amended)

“...for 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 ...” (Emergency Wetlands Resources Act of 1986; 16 U.S.C. 3901(b)); and,

“... to conserve (A) fish or wildlife which are listed as endangered species or threatened species or (B) plants ...” (Endangered Species Act of 1973; 16 U.S.C. 1534).

“...to secure for the American people of present and future generations the benefits of an enduring resource of wilderness... wilderness areas ... shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness: ...” (Wilderness Act of 1964; Public Law 88-577; 16 U.S.C. 1131-1136)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The Mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Improvement Act (Improvement Act); 16 U.S.C. 668dd(a)(2)).

DESCRIPTION OF PROPOSED USE

(a) What is the use? Is the use a priority public use?

The uses are wildlife observation and photography, environmental education and interpretation. We are also allowing painting as part of wildlife observation. Wildlife observation, photography, environmental education, and interpretation are priority uses of the Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

(b) Where would the use be conducted?

These uses have been allowed and will continue to be allowed on designated roads and trails in all U.S. Fish and Wildlife Service-owned (Service) areas open to the public. These areas include, but are not limited to, the 12 miles of existing designated roads and trails listed below.

Wilderness area Trails

Ivory	0.8 miles
Yellow	0.9 miles
Blue	2.4 miles
Red	0.5 miles
Orange	1.6 miles

Silver	0.4 miles
Green	0.7 miles
Beige	0.5 miles
White	0.7 miles
Wildlife Observation Center	1.5 miles
Nature Detective Trail	0.3 miles
Bockhoven Trail	0.5 miles
Pleasant Plains Road	2.5 miles (vehicle use allowed)
Morris County Outdoor Edu. Center	0.1 miles

In addition, the Wilderness Area is open to off-trail use but due to seasonal changes some areas become difficult to traverse due to water levels.

(c) When would the use be conducted?

These uses occur throughout the year from sunrise to sunset when the refuge is open to the general public.

(d) How would the use be conducted?

Visitors enter the refuge at public entry points, designated parking areas or the north and south ends of Pleasant Plains Rd.

Wildlife observation, painting, and photography occur on an individual or group basis. Groups larger than 10 should contact the refuge to plan their visit so staff or volunteers can direct or lead groups to an appropriate area. Visitors that will be participating in painting will occur in a way to not inhibit pedestrian or vehicle traffic.

Information kiosks and refuge brochures identify the roads and trails that are open.

(e) Why is this use being proposed?

The Improvement Act defines wildlife observation, photography, environmental education, and interpretation as public uses that, if compatible, are to receive our enhanced consideration over other general public uses. Authorizing these uses will provide opportunities for the public to enjoy wildlife and plants on the refuge in accordance with law, and it will produce better-informed public advocates for Service programs.

These uses will provide opportunities for visitors to observe and learn about wildlife and wild lands at their own pace in both structured and unstructured environments, and observe wildlife in their natural habitats firsthand. These four priority uses provide visitors with opportunities to enjoy refuge resources and gain a better understanding and appreciation of fish and wildlife, wild lands ecology, the relationships of plant and animal populations in an ecosystem, and wildlife management. These activities will enhance public understanding of natural resource management programs and ecological concepts, enable the public to better understand the problems facing our wildlife and wild lands resources, help visitors to better

understand how they affect wildlife and other natural resources, and learn about the Service's role in conservation and restoration.

Photographers and artists will gain opportunities to photograph, sketch or paint landscapes and wildlife in its natural habitat. These opportunities will increase the publicity and advocacy of Service programs. Photography and painting provides wholesome, safe, outdoor recreation in a scenic setting, and entices those who come strictly for recreational enjoyment to participate in the educational facets of our public use program and become advocates for the refuge and the Service.

Visitors need a way to access these priority uses. By allowing visitors to walk, hike, and use motorized vehicles in designated areas of the refuge, we are providing access to these important priority public uses with minimal impacts to sensitive wildlife and habitat.

AVAILABILITY OF RESOURCES

The resources necessary to provide and administer this use are available within current and anticipated refuge budgets. Staff time associated with administration of this use is related to assessing the need for road and trail maintenance and repair, maintaining kiosks, gates and recording collected data, sign-posting roads and trails, analyzing visitor use patterns, monitoring the effects of public uses on refuge resources and visitors, and providing information to the public about the use.

Providing information to the public and Administration needs	=	\$10,000
Resource impact monitoring	=	\$10,000
Maintenance needs	=	\$9,000
Total	=	\$29,000

- FY 2012 Budget Allocations:
 - Employee salaries and benefits = \$913,000
 - Fixed costs (utilities, fuel, administrative) = \$110,000
 - Discretionary funds (management capability) = \$344,000
 - Total available funds for FY 2012 = \$1,367,000

The use would be manageable with existing resources.

ANTICIPATED IMPACTS OF THE USE

Access in the Wilderness Area is limited to mainly the designated trails due to the wet soil conditions. The highest numbers of visitors are during the spring and fall which coincides with the wettest soil conditions. Users are limited to mainly the designated trails. The summer is a drier time in the Wilderness Area but numbers of visitors is limited due to the high number of nuisance insects, low numbers of migratory birds, and dense vegetation that limits wildlife observation. During deep freeze in the winter, access is also improved in the Wilderness Area

but numbers of visitors again is limited due to the cold temperatures, minimal wildlife, and dormant vegetation. The number of one-time users in the Wilderness Area is regulated by the distribution, size and total number of access parking areas. This maintains a quality wilderness experience for the user while also reducing the resource impacts.

Following are descriptions of potential adverse effects on natural resources of wildlife observation, painting, photography, environmental education, and interpretation accessed by walking, hiking, and motorized vehicles in authorized areas within the refuge. Effects of other modes of access (e.g., snow-shoeing, cross-country skiing) are addressed in separate documents.

Effects on Hydrology and Water Quality: The refuge minimizes adverse effects on water resources in a variety of ways. The refuge has developed the trails to minimize erosion and adverse impacts to hydrology and water quality through planning and placement in areas that are not subject to high levels of erosion and that are not adjacent to sensitive areas. The refuge will monitor the amount of use on trails to prevent over use and erosion and degradation of trails. One way the refuge minimized the impacts has been to construct boardwalks on some of our heavily visited areas to prevent impacts to hydrology. Also the Wildlife Observation Center and wilderness trail parking lots are graveled and are, therefore, more porous than impervious surfaces such as asphalt or concrete. This allows precipitation to absorb into the ground and preventing storm runoff into the brooks and streams causing sediment loading and pollution runoff.

Effects on Vegetation: To facilitate wildlife observation, photography, and environmental education, and interpretation, we allow hiking access on designed trails and access throughout the Wilderness Area. We will also allow vehicle access on Pleasant Plains Road. Short-term effects consist of the deterioration of plant material, whereas long-term effects of trampling include direct and indirect effects on vegetation and soils like diminishing soil porosity, aeration, and nutrient availability through soil compaction (Roovers et al. 2004). Compaction of soils thus limits the ability of plants, particularly rare and sensitive species, to re-vegetate affected areas (Hammit and Cole 1998). Where adverse impacts to vegetation are observed, the refuge will take necessary measures, such as remediation and trail closures, to restore plant communities.

We anticipate that allowing use on designated routes will cause some vegetation loss. Foot travel may increase root exposure and trampling effects, however we anticipate that under current and projected use the incidence of these problems will be minor. Routes for pedestrian travel consist of existing trails and boardwalks that have been used for many years. Designated routes do not have any known occurrences of rare plant species on their surface or soils subject to compaction that will be impacted by this use. Users leaving designated trails could have impacts to adjacent vegetation. Trails will be monitored, problem areas will be identified, and appropriate restoration and protection efforts will be made.

Highly traveled trails such as the ones at the Wildlife Observation Center have had boardwalks built to lessen the impacts on vegetation and wildlife disturbance. This allows visitors to quietly walk through these areas with minimal disturbance to the surrounding wildlife. Boardwalks have also been observed to be used as cover by some of the common species of turtles, fox, frogs, snakes, and salamanders present in this area.

Effects on Soil: Under current levels of use, impacts to soils (erosion, compaction) are not likely to be significant. In addition, pedestrian travel is not likely to significantly increase erosion or stream alteration. Soils throughout Great Swamp are predominantly poor to poorly drained silt loam, stratified lacustrine sand, silt and clay. These soils by nature allow vegetation such as grasses, legumes, wild herbaceous plants, hardwoods and coniferous trees to recover rather quickly. (NRCS 1976) These naturally compact soils will have little change from pedestrian traffic. Years of observation from staff of ground impacts by foot traffic has revealed little to no change. Therefore, no significant hydrologic impacts are anticipated from this use subject to the stipulations in this compatibility determination.

Effects on Wildlife: We anticipate that there will be temporal disturbances to wildlife species using habitat on or directly adjacent to the designated trails and Pleasant Plains Road. Based on current levels of use these disturbances are likely to be short term as wildlife will be able to return during hours the refuge is closed to the public or on days of low use (week days). With current use there are still frequent sighting of wildlife along designated routs. Designated routes were selected based on refuge staff's long time observations and best available information concerning wildlife species and sensitive habitats on the refuge. Long-term impacts may include certain wildlife species avoiding trail corridors as a result of this use over time. These impacts are not likely to significantly affect wildlife populations along these routes based on the current use pattern.

Short-term and long-term adverse impacts will be expected for wildlife populations. Disturbances will vary by wildlife species involved and the type, level, frequency, duration, and the time of year activities occur. Beale and Monaghan (2004) found that adverse effects to wildlife increase as number of users increase. The study found that an animal's response to one visitor walking down a trail is entirely different than its response to a group of users walking down a trail. The refuge recognizes that large group sizes may amplify negative effects to wildlife; therefore, groups larger than 10 are required to notify the refuge prior to visiting. This will enable the refuge to understand which trails are preferred by large groups, and to monitor any potential excessive wildlife disturbance created by large groups. Having the ability to monitor these kinds of disturbances will also enable the refuge to mitigate impacts associated with large groups. Examples of mitigation may include directing large groups to less sensitive habitats during breeding seasons, assigning refuge staff to lead or meet with the group while on refuge lands to better monitor the group and/or limit over all group size.

Human disturbance can cause an animal to vacate an area or habitat due to the amount or frequency of disturbance. In a study done by Gill et al. (2001), the decision of whether or not to move away from disturbed areas will be determined by factors such as the quality of the site currently being occupied, the distance to and quality of other suitable habitats, the relative risk of predation or density of competitors in different sites, and the investment that an individual has made in a site (for example, in establishing a territory, gaining dominance status or acquiring information).

There is evidence to suggest that species most likely to be adversely affected are those where available habitat is limited, thus constraining them to stay in disturbed areas and suffer the costs

of reduced survival or reproductive success (Gill et al. 2001). Because of the diversity of habitats represented on the refuge any population level effects to wildlife species from trail use might be minimized by the abundance of habitat on the refuge and adjacent lands. Wildlife disturbance may be compounded by seasonal needs. For example, causing mammals to flee during winter months would consume stored fat reserves that are necessary to survive the winter. Hammitt and Cole (1998) found white-tailed deer females with young are more likely to flee from disturbance than those without young. Some species, like warblers, would be negatively affected by disturbance associated with bird watching particularly during the breeding season.

For songbirds, physiological changes in response to environmental stressors can reveal cryptic effects of disturbance that can potentially lead to species decline. However, such responses may vary with life history. In findings from (Bisson 2011) suggest that some song birds quickly acclimate to a limited amount of human disturbance during the breeding season. This response may be an adaptive response for any ‘fast-living’ species with a short life span and a short and synchronized breeding season.

We will take all necessary measures to minimize all of these impacts, particularly where group educational activities are involved. We will evaluate the sites and programs periodically to assess whether they are meeting the objectives, and to prevent site degradation. If evidence of unacceptable adverse impacts appears, we will rotate the activities to secondary sites, or curtail or discontinue them. We will post and enforce refuge regulations, and establish, post, and enforce closed areas.

Effects on Threatened and Endangered Species:

There are two Federal-listed species known to occur on the refuge. Indiana bats (*Myotis sodalis*), listed as endangered, are known to use the refuge’s forested areas for foraging, roosting, and may have a summer maternity colony on refuge lands as well. There are also locations on the refuge that contain bog turtles (*Glyptemys muhlenbergii*) and other areas where the bog turtle was historically found.

Based on the research done on the refuge using radio-telemetry tracking and bat acoustic surveys, the refuge provides foraging and roosting habitat for Indiana bats. We are planning to continue mist net surveys to assess the status of Indiana bats within the refuge. Currently roost sites are in closed areas of the refuge or off trails. Indiana bat will continue to be monitored with cooperation of many of our partners and with New Jersey USFWS Ecological Field Office throughout the state and if they are found to use public areas or trail corridors on the refuge public use in those areas will be re-evaluated. We anticipate that these uses are not likely to adversely affect Indiana bats because these activities do not coincide with the area where this species is known to occur.

Based on radio-telemetry tracking the refuge provides foraging, nesting, and hibernation habitat for the bog turtle. The bog turtles will continue to be tracked and trapping will continue in areas that have historically had bog turtles to find all areas this species occurs on the refuge. All known and historical bog turtle sites are closed to the public and not located near trails. We anticipate that these uses are not likely to adversely affect bog turtles.

Since all known threatened or endangered animals utilizes areas of the refuge that are closed to the public, we anticipate no adverse effects on the populations.

PUBLIC REVIEW AND COMMENT

This compatibility determination is being released concurrent with the draft Comprehensive Conservation Plan/Environmental Assessment for a 45-day review and comment period.

DETERMINATION (CHECK ONE BELOW):

Use is not compatible

Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY

The refuge has developed a list of criteria for determining whether any given route would be appropriate for public wildlife observation, wildlife photography, environmental education or interpretation. These criteria apply to current and future trails. Criteria are as follows:

Checklist for Existing Routes to Be Eligible for Compatibility Consideration *

**(Routes must meet all criteria)*

1. Route provides an opportunity to view a variety of habitats and wildlife.
2. Route is safe for the access proposed at current use levels.
3. Route requires minimal annual maintenance to ensure safe access and to prevent further habitat degradation.
4. Route has a low potential for fragmenting habitat or disturbing wildlife populations.
5. Any route crossing of sensitive or hydric soils occupies the shortest possible distance.
6. Continued use of the existing route is not likely to cause further wetland alteration or degradation. There is low risk that hydrology, soil stability, sensitive plant communities, riparian zones, and wildlife habitats would be adversely affected.

Additional stipulations that will apply to ensure compatibility include:

— Refuge regulations will be posted and enforced. Closed areas will be established as needed, posted, and enforced. Signs necessary for visitor information, safety, and traffic control will be kept up to date.

— The known presence of a threatened or endangered species will preclude any new use of an area until the refuge manager determines otherwise.

— Locations for public uses will be chosen to minimize impacts to wildlife and habitat. We will periodically evaluate sites and programs to assess whether objectives are being met and to prevent site degradation. If evidence of unacceptable adverse impacts appears, the location(s) of activities will be rotated with secondary sites, curtailed, or discontinued.

— Walking and hiking are restricted to hours open to the general public.(Sunrise to sunset).

— The refuge conducts an outreach program to promote public awareness and compliance with public use regulations on the refuge.

- Group size is encouraged to be no more than 10 persons to promote public safety, accommodate other users, and reduce wildlife disturbance. Groups larger than 10 persons must contact the refuge office prior to visiting the trail system so the refuge can determine if the group will require a Special Use Permit (SUP). Groups traveling only on roads shared with vehicles are not required to contact the refuge office or obtain a SUP.
- All routes designated for public access are annually inspected for maintenance needs. Prompt action is taken to correct any conditions that risk public safety. Roads and trails are maintained at a level that reasonably accounts for safe travel.
- Guidelines to ensure the safety of all participants will be issued in writing to any special use permit holder for the activities and will be reviewed before the activity begins.
- Routes designated for public access are monitored periodically to determine if they continue to meet the compatibility criteria (listed above) established by the refuge. Should monitoring and evaluation of the use(s) indicate that the compatibility criteria are or will be exceeded, appropriate action will be taken to ensure continued compatibility, including modifying or discontinuing the use.
- Routine law enforcement patrols are conducted throughout the year. The patrols promote education and compliance with refuge regulations, monitor public use patterns and public safety, and document visitor interaction.

JUSTIFICATION

Environmental education, interpretation, wildlife observation, and photography are all priority public uses and are to receive enhanced consideration on refuges, according to the Improvement Act. Providing increased wildlife-dependent recreational opportunities promotes visitor appreciation and support for refuge programs as well as habitat conservation efforts in New York metropolitan area and elsewhere.

Environmental education and interpretation activities generally support refuge purposes and impacts can largely be minimized. Environmental education and interpretation are public use management tools used to develop a resource protection ethic within society. These tools allow us to educate refuge visitors about endangered and threatened species management, wildlife management, ecological principles and ecological communities. Environmental education and interpretation also instill an ‘ownership’ or ‘stewardship’ ethic in visitors. They strengthen Service visibility in the local community.

The majority of visitors to the refuge are there to view and/or photograph the wildlife and upland, wetland, and grassland habitat areas. Some visit to develop an understanding of natural or cultural history. This purpose is in accordance with a wildlife-oriented activity and is an acceptable secondary use. There will be some visitor impacts from this activity, such as trampling vegetation (Kuss and Hall 1991) and disturbance to wildlife near trails (Burger 1981, Klein, 1989); however, stipulations to ensure compatibility will make these impacts minimal. For example, wildlife disturbance will be limited to the parts of the refuge that are open to the public

which represents a fraction of the total wildlife habitat available at Great Swamp leaving the remaining area un-disturbed.

By allowing these uses on trails which have been evaluated by refuge staff to meet the criteria presented in this document, physical impacts to vegetation, soils, hydrology, wetland communities and ecological integrity of Great Swamp will be minimized. Through proper trail maintenance these impacts will be further reduced. Hydrologic and soil impacts were generally inherited with refuge lands and are being remediated through routine maintenance operations. These uses will not affect the refuge's ability to restore impacted lands nor will they materially increase sedimentation, erosion or hydrologic impacts on refuge lands.

By limiting the uses to designated trails on a small percentage of the refuge and within the most common habitat type, disturbance will be limited and manageable. For this reason disturbance effects will not prevent the refuge from fulfilling the purposes of the Fish and Wildlife Act (1956) or the mission of the Refuge System for conserving, managing, restoring, and protecting wildlife resources. Through these measures the refuge still fulfills its obligations to ensure the biological integrity of the refuge's wildlife, plant and habitat resources.

These uses will not have an effect on threatened or endangered species. No public use trails are open on lands which are occupied by the threatened bog turtle. The endangered Indiana bat is nocturnal and therefore these uses will not affect their foraging activities.

For the reasons discussed above, these uses will not affect the refuge's ability to conserve wetlands or protect, manage, and restore the wildlife and plant resources, as mandated through the Emergency Wetlands Resources Act (1986) and the Fish and Wildlife Act (1956), or the mission of the Refuge System. These uses will help add to the public's understanding of Wilderness through their engagement and not detract from our abilities to manage Wilderness as we are mandated to through the Wilderness Act of 1964. Based on this information, we have determined that environmental education and interpretation and wildlife observation and photography will not materially interfere with or detract from the mission of the Refuge System or the purposes for which the refuge was established.

SIGNATURE:

Refuge Manager: _____
(Signature) (Date)

CONCURRENCE:

Regional Chief: _____
(Signature) (Date)

MANDATORY 15-YEAR REEVALUATION DATE: _____

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COMPATIBILITY DETERMINATION

USE

White-tailed Deer Hunt (firearm and archery)

REFUGE NAME

Great Swamp National Wildlife Refuge

DATE ESTABLISHED

1960

ESTABLISHING AND ACQUISITION AUTHORITY

Great Swamp National Wildlife Refuge (refuge) was established primarily under the authorities of the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711, 40 Stat. 755) and the Migratory Bird Conservation Act of 1929 (16 U.S.C. 715-715r, 45 Stat. 1222), as amended, by transfer of approximately 2,900 acres of land donated to the Federal Government by the Great Swamp Committee of the North American Wildlife Foundation.

REFUGE PURPOSES

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

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds”. (Migratory Bird Conservation Act of 1929; 16 U.S.C. 715d)

“...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 ...” (Refuge Recreation Act; 16 U.S.C. 460k-1) *“the Secretary...may accept and use...real...property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors”*... (Refuge Recreation Act; 16 U.S.C. 460k-2, as amended)

“...for 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 ...” (Emergency Wetlands Resources Act of 1986; 16 U.S.C. 3901(b)); and,

“... to conserve (A) fish or wildlife which are listed as endangered species or threatened species ... or (B) plants ...” (Endangered Species Act of 1973; 16 U.S.C. 1534).

“...to secure for the American people of present and future generations the benefits of an enduring resource of wilderness... wilderness areas ... shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness: ...”
(Wilderness Act of 1964; Public Law 88-577; 16 U.S.C. 1131-1136)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The Mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Improvement Act; 16 U.S.C. 668dd (a) (2)).

DESCRIPTION OF PROPOSED USE

(a) What is the use? Is the use a priority public use?

The use is an annual white-tailed deer hunt with two separate and distinct hunting seasons. Firearm season each November and fall archery (bow) season each October. Hunting is one of the six priority public uses identified by the National Wildlife Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997.

(b) Where the use would be conducted?

Firearm hunting will be allowed on approximately 6,376 acres of the refuge [about 82 percent of the total area (7,735 acres)], which includes the Wilderness and Management Areas, with the exception of land designated as “Safety Zone” or “No-Entry” (Bitler 2011). Fall bow hunting will be allowed on approximately 5,000 acres of the refuge (about 65 percent of the total area), which includes the Wilderness Area east of Long Hill Road and Management Area south of White Bridge Road, with the exception of land designated as “Safety Zone” or “No Entry.”

The 3,660-acre Wilderness Area forms most of the eastern side of the refuge, and is comprised of bottomland red maple floodplain forest, small upland “islands” of American beech and chestnut oak-dominated hardwood forest, and a small amount of open water. The Management Area forms the western side, and is characterized by stands of bottomland and upland forest types (i.e., pin oak – swamp white oak and mesic beech – oak) interspersed among about 840 acres of scrub-shrub habitat, 460 acres of early successional fields, and five impoundments (570 acres). Additionally, Black Brook, Great Brook, Loantaka Brook, and Primrose Brook flow through the refuge and drain into the Passaic River that runs along portions of the western refuge boundary [U.S. Fish & Wildlife Service (Service) 2009].

Two federally listed species occur on the refuge, the endangered Indiana bat (*Myotis sodalis*) and the threatened bog turtle (*Glyptemys muhlenbergii*). Indiana bats are known to forage and roost throughout the Wilderness and Management Areas during the summer maternity period (Kitchell 2008). Bats arrive in April and remain on the refuge into October, after which they migrate to winter hibernacula (USFWS 2007). A small population of bog turtles occurs in a few acres of emergent wetland habitat in a refuge Safety Zone area. Additionally, several wetlands associated with seeps that historically have supported bog turtles are scattered throughout the refuge; in the recent past, single occurrences of the species have been documented in two of these areas. State-listed species that have been documented on the refuge include the State-endangered peregrine falcon (*Falco peregrinus*), red-shouldered hawk (*Buteo lineatus*), bald eagle (*Haliaeetus leucocephalus*), vesper sparrow (*Pooecetes gramineus*), blue-spotted salamander (*Ambystoma laterale*) and bobcat (*Lynx rufus*), and the State-threatened barred owl (*Strix varia*), long-eared owl (*Asio otus*), red-headed woodpecker (*Melanerpes erythrocephalus*), and wood turtle (*Glyptemys insculpta*) [Bitler 2011, New Jersey Division of Fish & Wildlife (NJDFW) 2012a]. The refuge also contains about 31 acres of the globally rare herbaceous community called the Floodplain Pool Association along portions of the Passaic River, Black Brook, and Great Brook. Additionally, rare wetland plants documented on, or adjacent to, the refuge include featherfoil (*Hottonia inflata*), water-plaintain spearwort (*Ranunculus ambigens*), black-girdle woolgrass (*Scirpus atrocinctus*), and water horehound (*Lycopus americanus*) (USFWS 2009).

Much of the land adjacent to the refuge is residential, with the exception of four Farmland Preservation properties, a New Jersey Natural Lands Trust property, Somerset County Lord Stirling Park (along the western boundary), and Morris County Great Swamp Outdoor Education Center (along the eastern boundary) (USFWS 2009). Safety Zones (1,329 acres) include refuge lands within about 450 feet of all residences, buildings, parking areas, and equipment storage facilities. Carrying a loaded firearm within 450 feet of a building or within 450 feet of a playground (whether or not occupied) is prohibited. Carrying a bow with an arrow in place within 150 feet of a building or within 450 feet of a playground (whether occupied or not) is prohibited. The refuge also has a 64-acre No Entry area, which cannot be entered by hunters due to acquisition deed restrictions. Designated hunter parking lots will be distributed throughout the Management Area and around the perimeter of the Wilderness Area to provide access. A Deer Check Station (located by the refuge headquarters) will be open from 7:00 a.m. – 7:00 p.m. during the days of the firearm hunt (Bitler 2011). During the bow hunt, a Check Station may be established, or hunters will be required to report information on their harvested deer using the NJDFW Automated Harvest Report System.

(c) When would the use be conducted?

The annual firearm deer hunt will be conducted during the fall season. In recent years, the hunt has occurred over a 5-day period in November, beginning with a 1-day youth hunt on a Saturday, and followed by a 4-day regular hunt the following Wednesday through Saturday.

Currently, the regular hunt dates coincide with school closings associated with the annual New Jersey Teacher Convention to maximize youth hunting opportunities (Bitler 2011). In addition to the hunting days, during daylight hours, scouting will be permitted 2 days in the Management Area (the Saturday prior to, and the Sunday following, the day of the youth firearm hunt). The fall bow hunt will be conducted during the fall season over a 5-day period in October (Monday through Friday). In addition to the hunting days, during daylight hours, scouting will be permitted in the Management Area, south of White Bridge Road, the Saturday prior to the day of the hunt. For both the firearm and bow hunting seasons, as population surveys are conducted and biological data are collected from harvested deer and assessed annually, season dates may change and the season length be extended or reduced. Additionally, once the bow hunt is established, we will consider adding a 1-day youth bow hunt prior to the regular bow hunt. Hunting hours will be from one-half hour before sunrise to one-half hour after sunset.

(d) How would the use be conducted?

Firearm and fall bow deer hunting will be conducted within the framework of New Jersey State regulations. The New Jersey Division of Fish and Wildlife (NJDFW) oversees the Statewide deer hunting program. The State is sub-divided into 70 Deer Management Zones and deer hunting opportunities and bag limits in most of the Zones are governed by eight State hunting regulation sets (NJDFW 2012b). The refuge comprises Deer Management Zone 38 and the refuge deer hunt is administered by the Service in cooperation with NJDFW. The NJDFW will issue up to 450 (maximum of 200 shotgun, 200 muzzleloader, and 50 bow) Zone 38 permits. In addition to a State hunting license and a Zone 38 permit, hunters who wish to hunt on the refuge must also purchase a Federal permit and follow refuge-specific regulations. Regulations and information are mailed to hunters who purchase refuge hunting permits and are published in the New Jersey's annual hunting digest (Bitler 2011). The hunt, as currently proposed, complies with the Final Environmental Impact Statement (USFWS 1987), revised 2010 Environmental Assessment, and 2013 CCP/EA.

During the firearm deer hunt, the entire refuge will be closed to all other public use activities, except that during the 1-day youth hunt, only the western half (Management Area) of the refuge will be closed. Signs will be posted at public access points and the closure will be publicized in local newspapers. The refuge will establish season dates and annual bag limits annually. For example, from 2007 – 2011, the bag limit was two deer, with a limit of one antlered buck per hunter. Shotgun hunters could take either two antlerless deer or one antlerless followed by one antlered deer, whereas muzzleloader hunters could take, in any order, two antlerless or one antlered and one antlerless deer. Further, shotgun hunters could hunt in the Management Area, but hunters using muzzleloaders could hunt in both the Management and Wilderness Areas. During the youth hunt, the bag limit was one deer of either sex (Bitler 2011). In 2012, changes in refuge

regulations included limiting the bag limit for all hunters to one deer of either sex. Hunters will be required to bring their harvested deer to the refuge Deer Check Station where biological data on the animals will be collected by refuge staff.

During the fall bow and arrow season the refuge will remain open to the public. The refuge will establish an annual bag limit similar to that of the firearm season. Weapons include long bow, recurve bow, compound bow, and crossbow. Hunters, upon harvesting any deer, must complete all information requested on the State of New Jersey Harvest Report System. A Check Station may be established, or hunters will be required to report information on their harvested deer using the NJDFW Automated Harvest Report System.

(e) Why is this use being proposed?

An annual white-tailed deer firearm hunt has been conducted on the refuge since 1974 to maintain the refuge deer population at (or below) a level that will not negatively impact wildlife habitat and the integrity of ecological communities (about 20 deer/mi²; Tilghman 1989), while providing a safe, high-quality outdoor experience for refuge hunters. Deer are an integral part of the wildlife resources found at the refuge and serve important ecological functions. For example, deer browsing reduces the dominance of shrubs that form dense thickets, facilitating growth of other species, and thus, promoting ecological diversity (Royo et al. 2010). Deer also represent a significant vector of seed dispersal via ingestion and subsequent defecation (Myers et al. 2004), and serve as important seasonal prey to coyotes, bobcats, black bears (Miller et al., 2003, Turner et al. 2011, Northeast Deer Technical Committee 2009). However, in the absence of the intense predation pressure in which deer populations evolved, the species has the potential to grow beyond its biological carrying capacity (BCC) at a local and regional scale (Northeast Deer Technical Committee 2009). Overabundance of deer populations is one of the most challenging problems facing wildlife managers (Warren 1997).

While deer at moderate densities serve critical ecological functions, deer at high densities are known to significantly and negatively impact forest health. Over-browsing can eliminate the woody and herbaceous understory layer in forest stands, including seedlings and saplings of canopy trees. Rare plants may be lost entirely and the understory vegetation may become dominated by unpalatable plants [e.g., ferns, grasses, and sedges (Horsley et al. 2003); striped maple, American beech (Kain et al. 2011); and sugar maple (Anderson and Katz 1993)]. Less palatable, invasive plants (e.g., Japanese barberry) also may become established, outcompete native regenerating plants and become pervasive in the understory (Tilghman 1989, Miller et al. 1992). Ultimately, overbrowsing reduces habitat quality and results in the decline of many species that depend on well-developed, native understory. Long-term, forest composition changes, succession is altered, and the result is a loss of ecological diversity (Warren 1991, Rooney 2001, Horsley et al. 2003, Cote and Rooney 2004, Crimmins et al. 2010, Kain et al. 2011, Tanentzap et al. 2011).

In addition to reducing forest health, overpopulated herds exhibit reduced herd health, manifested by increased prevalence of parasites and disease, reduced body weights, and lower reproductive and winter survival rates (Miller et al. 2003, Northeast Deer Technical Committee 2009). High deer densities also increase the extent that human-wildlife conflicts occur, such as a greater number of deer/vehicle collisions, increased damage to landscape plants and agricultural crops, and an increased abundance of deer ticks (*Ixodes dammini*) that spread lyme disease (Miller et al. 2003; Northeast Deer Technical Committee 2009). In the early 1970s the refuge documented severe “browse lines” in forested habitat due to excessive deer herbivory, as well as reduced herd health, attributed to disease and starvation problems (Roscoe and Howard 1974); the first refuge deer hunt was initiated in 1974.

Deer populations are managed primarily by State agencies through regulated hunting seasons, and currently, hunting remains the only practical available option (Palmer et al. 1980, Northeast Deer Technical Committee 2009). Other techniques including: (1) trapping and transferring excess deer to other locations, (2) using fencing and repellents to manage conflicts, (3) using fertility control agents, (4) providing supplemental food, (5) controlling deer herds with sharpshooters, and (6) reintroducing large predators are all limited in applicability, prohibitively expensive, logistically impractical and technically infeasible (Conover 2000, Northeast Deer Technical Committee 2009).

While similar hunting opportunities exist outside refuge boundaries at the county level, at the township level, hunting activity is limited due to all of the development that surrounds the refuge. At the county level, the refuge is bordered by State Deer Management Zone 13, which includes portions of Morris, Somerset, and Union Counties. State regulations in Zone 13 are liberal. For example, during the 2011-12 State deer harvest, a total of 1,706 deer were harvested from Zone 13. Currently, the archery season spans 135 days over three seasons, with a bag limit of three bucks and an unlimited number of antlerless deer per hunter; the muzzleloader season spans 62 days, with a bag limit of one buck and unlimited antlerless deer; and the shotgun season spans 50 days over two seasons, with a bag limit of two bucks and unlimited antlerless deer. Additionally, there is a 1-day youth archery hunt, and 1-day youth firearm hunt, with bag limits of one deer of either sex (NJDFW 2012b).

At the township level, while a huntable deer population exists, there are limited public hunting opportunities as the majority of land surrounding the refuge is developed and privately owned. Because there are few large public places open for hunting, the refuge is providing a large contribution of deer control, which is not only benefiting refuge lands, but also the adjacent communities. Additionally, refuge regulations are more conservative than those of NJDFW, as one of the goals of the refuge deer hunt program is to provide a high-quality outdoor experience for refuge hunters, which includes increasing the likelihood of harvesting an older male (≥ 3.5 years; Bitler 2011). This coincides with USFWS policy, which emphasizes the need to consider age class distribution when managing wildlife populations (USFWS 2000). To attempt to maintain a buck age structure where at least 30

percent of the bucks are ≥ 3 years old, in 1999, the refuge instituted an Earn-a-Buck Program for shotgun hunters and limited all hunters to one antlered buck per year (Bitler 2011). The refuge's Comprehensive Conservation Plan also calls for adding an archery season to the Deer Hunting Program to provide archery hunters an opportunity to hunt on the refuge.

AVAILABILITY OF RESOURCES

The annual Deer Hunting Program is administered by the Deputy Refuge Manager through Administrative, Biological, Maintenance, and Visitor Services staff. The Heavy Equipment Operator maintains 31 Hunter Parking Lots, many of which are gated and/or grass lots open only on the days of the hunt. Resource impacts are monitored by a Wildlife Biologist and resource protection is provided by a Federal Wildlife Officer. In addition to staff, volunteers contribute approximately 200 hours per year to the hunt program. Volunteers assist staff with carrying out pre-season deer spotlight surveys, marking Safety Zone and No Entry areas, and collecting information on harvested deer at the Deer Check Station.

Annual costs associated with the administration of the annual deer hunt on the refuge are estimated below:

■ Review annual deer hunting program, meet with staff, and conduct administrative tasks

GS 13 Refuge Manager:	2 days = \$716.73
GS 12 Deputy Refuge Manager:	5 days = \$1,734.80
GS 12 Visitor Services Manager:	7 days = \$1,512.00

■ Organize and conduct annual pre-season deer spotlight survey, analyze data, and prepare report

GS 12 Deputy Refuge Manager:	1 day = \$346.96
GS 12 Visitor Services Manager:	7 days = \$1,512.00
GS 11 Wildlife Biologist:	15 days = \$3,846.00
GS 9 Visitor Services Specialist:	3 days = \$519.00
GS 9 Federal Wildlife Officer:	3 days = \$615.12

■ Issue hunting permits and maintain a hunter database

GS 4 Administrative Assistant:	45 days = \$1,746
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■ Provide information to the public about the deer hunt

GS 12 Visitor Services Manager:	1 day = \$216.00
GS 9 Visitor Services Specialist:	2 days = \$346.00
GS 4 Administrative Assistant:	12 days = \$455.00

- Maintain and/or prepare (mowing) hunter parking lots, maintain pink flagging to designate “Safety Zone” and “No Entry” areas, open and close gates, place “Refuge Closed” and hunter lot number (1-31) signs

GS 10 Engineering Equipment Operator:	5 days = \$1,017.20
GS 7 Maintenance Worker:	5 days = \$838.40
GS 11 Wildlife Biologist:	5 days = \$1,282.00
GS 12 Visitor Services Manager:	1 day = \$216.00
GS 9 Visitor Services Specialist:	2 days = \$346.00

- Operate Deer Check Station

GS 12 Visitor Services Manager:	4 days = \$864.00
GS 11 Wildlife Biologist:	5 days = \$1,282.00
GS 9 Visitor Services Specialist:	3 days = \$519.00

- Monitor hunting activities pre-hunt, during the hunt, and post-hunt to ensure hunters and visitors are in compliance with all applicable laws and regulations. Law Enforcement also is available to assist with search and rescue and emergency response.

GS 9 Federal Wildlife Officer:	14 days = \$2,870.56
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- Analyze harvest data and prepare annual Deer Hunting Program report

GS 11 Wildlife Biologist:	15 days = \$3,846
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Total cost of approximately \$26,000.

FY 2012 Budget Allocations:

- Employee salaries and benefits = \$913,000.00
- Fixed costs (utilities, fuel, administrative) = \$110,000.00
- Discretionary funds (management capability) = \$344,000.00
- Total available funds for FY 2012 = \$1,367,000.00

Upon analysis, the refuge has adequate resources to manage deer hunting on Great Swamp NWR.

ANTICIPATED IMPACTS OF THE USE

Effects on Target Species Populations: Hunting activities will occur in the fall during deer mating season. It is possible that mature male deer may get harvested before they have had a chance to breed. This should not impact pregnancy rates, as does that fail to conceive are capable of coming into estrous every 21-30 days, from two to seven times. However, it could

extend the breeding season (Miller et al. 2003). During the days of the hunt, individual deer will be exposed to some level of disturbance that could affect their daily activities. Hammitt and Cole (1998) found that white-tailed deer females with young are more likely to flee from disturbance than those without young. Deer that are disturbed repeatedly but not harvested could lose stored fat reserves, which are important for winter survival. However, long-term impacts from hunters to deer populations are believed to be minimal due to the limited number of hunters (maximum 450 permits) and the short duration of the hunt (5 days). Overall, the refuge deer hunting program will not impair the local or regional population of deer. In fact, the use of hunting as a management tool for controlling deer populations directly benefits the health and quality of the remaining deer.

Safety is a major consideration related to deer hunting on the refuge. Much of the land adjacent to the refuge is residential and some area residents have expressed concern over the use of firearms to hunt deer. To address these concerns, the refuge is closed to all other public uses on the scheduled days of the regular hunt, and the western half of the refuge is closed during the youth hunt. Additionally, "Safety Zones" are delineated, within which hunting will not be permitted. Closing the refuge may be an inconvenience to regular visitors of the refuge (i.e., visitors who view and photograph wildlife on Pleasant Plains Road, walk their dog, bicycle, jog, ride horseback, etc.) as well as visitors who are not aware that the refuge is closed. It is anticipated that this issue could be resolved with outreach and education by, for example, explaining to the public that managing the white-tailed deer population helps to prevent over-browsing of refuge habitats.

Effects on Wildlife: In addition to disturbing deer, hunter disturbance to resident wildlife likely will occur at some level and has the potential to negatively impact wildlife populations on the refuge. Direct impacts on wildlife from disturbance can be expected wherever humans have access to an area, and the degree varies depending on a number of factors (e.g. habitat type, species, degree, and duration of disturbance, etc.). In general, human presence disturbs most wildlife, which typically results in a temporary displacement with no long-term effects on individuals or populations. Responses of wildlife to human activities include avoidance or departure from the site, the use of sub-optimal habitat, altered behavior or habituation, or in some cases, attraction (Owen 1973, Erwin 1980, Williams and Forbes 1980, Burger 1981, Kaiser and Fritzell 1984, Morton et al. 1989, Ward and Stehn 1989, Belanger and Bedard 1990, Kahl 1991, Klein 1993, Whittaker and Knight 1998). Disturbance can have other effects on wildlife including shifts in habitat use, abandonment of habitat, and an increase in energy expenditure (Knight and Cole 1991). While temporary disturbance to wildlife may occur on the refuge due to the hunt, long-term negative effects are unlikely because of the timing and duration of the deer hunt, and the limited number of hunters using the refuge.

The hunt will occur during the fall, a time of year when small mammals, reptiles, amphibians, and invertebrates are not breeding, and are less active or inactive. Thus, the likelihood of hunter

interaction with these animals will be rare, and any isolated encounters should not negatively impact these populations. State-listed bird species that possibly could be present and active on the refuge during the deer hunt include the State-endangered peregrine falcon, bald eagle, red-shouldered hawk, and vesper sparrow, and the State-threatened barred owl, long-eared owl, and red-headed woodpecker. In general, fall is the season for bird migration, and hunting could cause some level of disturbance to migrating birds during this time. Hunting activity may cause birds that are feeding and roosting in upland and wetland habitats to unnecessarily take flight, expending energy resources at a time when food resources are limited. While disturbance to the daily migrating and wintering activities of birds may occur, cumulative negative impacts should be negligible, because the hunting season does not coincide with the nesting season, which would impact reproduction, and the period of disturbance is short (5 days), reducing the likelihood that disturbance associated with the hunt would deplete important fat reserves.

Effects on Threatened and Endangered Species: Two federally listed species occur on the refuge, the endangered Indiana bat and the threatened bog turtle. Indiana bats are known to forage and roost throughout the Wilderness and Management Areas during the summer maternity period (Kitchell 2008). Bats arrive in April and remain on the refuge into October, after which they migrate to winter hibernacula (USFWS 2007). Disturbance by deer hunting to Indiana bats is unlikely because bats are gone from the refuge during the time of the hunt. The refuge also provides foraging, nesting, and hibernation habitat for the bog turtle. A small population occurs in a few acres of emergent wetland habitat in a refuge Safety Zone area. Additionally, several wetlands associated with seeps that historically have supported bog turtles are scattered throughout the refuge; in the recent past, single occurrences of the species have been documented in two of these areas. In general, activity of bog turtles during fall is limited as the animals reduce their movements and enter hibernacula (e.g., ground water-washed root systems of woody plants). Also, it is very unlikely that a hunter will encounter a bog turtle, as the primary population falls within a Safety Zone and much of the area is protected by fencing.

Effects on Vegetation: Short term trampling of vegetation by hunters will occur to some degree throughout the refuge during the firearm and bow deer hunting season. Additionally, vegetation in designated grass parking lots temporarily will be compressed from vehicles. Plant species vary in their resistance to trampling, which can lead to changes in plant communities. In general, plant diversity has been shown to increase with slight use and to decrease as use intensifies (Liddle 1997). Regardless, the overall physical effects of deer hunting on refuge plant communities are expected to be minimal. The number of hunters (maximum 450 permits) and duration of the hunt (5 days) are limited by refuge staff, use of all-terrain vehicles (ATVs) and permanent tree stands are prohibited, and the hunt takes place during the dormant season. Finally, potential impacts to vegetation from an overabundant deer population far outweigh the limited impacts on vegetation that could occur from trampling by deer hunters. In fact, positive, indirect effects on the vegetation (i.e., increased ecological diversity) will result from continued management of the refuge's white-tailed deer population.

Effects on Soil: Soils can become compacted and eroded as a result of continued foot traffic, and soils associated with wetland habitats have been rated as either high or very high in their potential for compaction (Bell 2002). However, impacts on soils from hunters during the deer hunt likely will be minimal. The use of ATVs, which can cause soil erosion, is not permitted. The increased foot traffic prior to entering off-road hunting sites should not significantly impact soils because the trails in the Wilderness Area were constructed in areas that are not subject to high levels of erosion, and the boardwalks and gravel roads in the Management Area provide low impact travel routes. Additionally, impacts from off-trail foot-traffic by hunters also are expected to be minimal due to the low number of hunters allowed on the refuge and the short duration of the hunt. Hunters going off-trail often follow existing deer trails, but in areas where new vegetation is trampled, effects likely will be temporary. The soils throughout the refuge (predominantly poor, to poorly drained silt loam, stratified lacustrine sand, silt, and clay) by nature allow vegetation such as grasses, legumes, wild herbaceous plants, hardwoods and coniferous trees to recover rather quickly (NRCS 1976). Additionally, the hunt will occur during the dormant season; in general, impacts to soils are greater during the growing season than the dormant period due to the greater soil moisture content at that time of year. Also, during the November hunt, the soils may be frozen or covered in snow, further reducing any short-term impacts on soils by hunters.

Effects on Hydrology and Water Quality: In general, the refuge minimizes adverse effects on water resources in a variety of ways. Trails are placed in areas that are not subject to high levels of erosion or adjacent to sensitive areas, to minimize erosion and adverse impacts to hydrology and water quality. Additionally, refuge has constructed boardwalks on some of the heavily visited areas to prevent impacts to hydrology. Further, the Wildlife Observation Center and wilderness trail parking lots are graveled and are therefore more porous than impervious surfaces such as asphalt or concrete. This allows precipitation to absorb into the ground and preventing storm runoff into the brooks and streams causing sediment loading and pollution run off. The refuge also does not permit the public to drive off designated refuge roads or to use ATVs, which can cause depressions in the soil and divert water from original drainage patterns.

Activities associated with hunting could impact refuge water resources. Because hunters are not restricted to using only trails designed for other public use activities, they may travel through areas that are susceptible to erosion and subsequent sedimentation. In such areas, concentrated off-trail foot traffic can affect the hydrology of an area by removing vegetation, compacting the soil, and causing water to channel and pool. Long-term, this can result in some drainages becoming dry while others accelerate erosion by being forced to carrying more water. However, impacts of hunters on the hydrology and water quality should be negligible. Hunter numbers are limited and hunters will be dispersed across the refuge, which will reduce repeated erosive actions on soils. Additionally, the soils may be frozen during the November hunting season, further reducing the potential for erosion and downstream sedimentation.

PUBLIC REVIEW AND COMMENT

This compatibility determination is being released concurrent with the draft Comprehensive Conservation Plan/Environmental Assessment for a 45-day review and comment period.

DETERMINATION (CHECK ONE BELOW):

Use is not compatible

Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY

To minimize inconvenience to the non-hunting public who use the refuge, signs that the refuge will be closed on the scheduled days of the regular firearm hunt and the western half of the refuge will be closed during the youth hunt will be posted at public access points, and the closure publicized in local newspapers. The refuge will remain open during the Fall Bow hunt.

To maintain a safe hunt, Safety Zones (lands within about 450 feet of all residences, buildings, parking areas, and equipment storage facilities, in which hunters are not permitted to carry a loaded firearm) will be established and delineated with pink flagging. Carrying a loaded firearm within 450 feet of building, within 450 feet of a playground (whether occupied or not), on public roads and in parking areas is prohibited. Carrying a bow with an arrow in place within 150 feet of a building or within 450 feet of a playground (whether occupied or not) is prohibited. Additionally, hunters must wear a minimum of 400 square inches of solid-color hunter orange clothing or material in a conspicuous manner on the head, chest, and back.

To reduce the level of disturbance to wildlife, the number of hunters on the refuge will be limited to a maximum of 400 (200 shotgun and 200 muzzleloader NJDFW permits) and target practice will be prohibited. Additionally, 31 hunter parking lots will be established to help distribute hunters across the refuge. Vehicles will be restricted to public roads and in designated parking areas, use of ATVs will be prohibited, and fires and camping will not be permitted. Hunters will be allowed to set up temporary tree stands. It will be unlawful to hammer nails, spikes, or other metal objects into any tree.

To assess herd health as it relates to BCC, firearm hunters will be required to bring their harvested deer to the refuge Deer Check Station so that biological data can be collected [i.e., age class, body weight, antler beam diameter, disease and parasite prevalence (Miller et al. 2003, Northeast Deer Technical Committee 2009)]. Bow hunters may be required to check their deer or report information on their harvested deer using the NJDFW Automated Harvest Report System.

In the event that the population density falls below desired levels, as evidenced by an annual evaluation of harvest data and pre-hunt spotlight surveys, bag limits and harvest strategies are

adjusted to reduce harvest pressure on the herd. For the 2009 deer season, 113 deer were harvested, including 48 bucks and 65 antlerless animals (does and fawns). For the 2010 deer season, a total of 121 deer were harvested, including 56 bucks and 65 antlerless animals. For the 2011 deer season, a total of 42 deer were harvested, including 22 bucks and 18 antlerless animals. The significant decline in harvested deer was due to an outbreak of Epizootic hemorrhagic disease (EHD) in the summer of 2011 resulting in a significant deer die-off (refer to section 3.1.16 for information regarding EHD). Similar temporary declines were also evident in 2007 and 2008 deer harvest numbers following an EHD outbreak in 2007. In general, this level of harvest in both cases, bag limits and harvest strategies were adjusted to reduce the number of adult does harvested. For example, rather than allowing an unlimited number of antlerless deer and one antlered buck per hunter as had been the case from 2002 to 2006, from 2007 to 2011, the bag limit was reduced to two deer total, with a limit of one antlered buck per hunter; to help maintain a more natural buck age-class distribution, shotgun hunters were required to shoot an antlerless deer first, before harvesting a buck. However, following the 2011 season, the bag limit was further reduced to one deer of either sex per hunter. In general, recent levels of harvest are expected to maintain deer populations within the refuge to a density that reduces impacts to the forest understory and allows for forest regeneration.

JUSTIFICATION

A deer hunt is necessary to fulfill one of the refuge's purposes; "the protection of natural resources." Deer population control will help maintain good health in the refuge deer herd and will help prevent ecosystem damage from over browsing and thus prevent adverse impacts on other wildlife species. Ecological benefits derived from regulated hunting include protection of the environment from over browsing, protection of flora and fauna that may be negatively impacted by deer overpopulation and the maintenance of healthy, viable deer populations for our benefit and that of future generations (Warren 1991, Rooney 2001, Horsley et al. 2003, Cote and Rooney 2004, Northeast Deer Technical Committee 2009, Crimmins et al. 2010, Kain et al. 2011, Tanentzap et al. 2011).

In addition to the ecological and biological reasons for continuing the annual deer hunt on the refuge, hunting is one of the six priority public uses as defined by the National Wildlife Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997. The Act states that hunting, if compatible, is to receive enhanced consideration over other general public uses in refuge planning and management.

The Service's policy is to provide expanded opportunities for recreational, public hunting when it is compatible with the Refuge System mission and specific refuge purposes, and consistent with sound wildlife management and public safety. We ensure that this use receives enhanced attention during planning and management. As listed in the purposes section of this compatibility determination, the refuge was established and subsequently land was acquired for a total of six purposes. Hunting will not materially interfere with or detract from the purposes related to

wildlife conservation, because hunting seasons reduce deer populations to levels that reduce the intensity of grazing which provides improved wildlife habitat, a healthier deer population, and increased plant diversity. Hunting will not materially interfere with or detract from the purposes related to migratory bird conservation because deer hunting will reduce the deer herd which will improve forest interior habitat for migratory landbirds. Additionally, the number of hunters, and timing and duration of the hunt is regulated to minimize impacts associated with human disturbance on migrating birds. Hunting will not materially interfere with or detract from the mission of the Service, because providing hunting opportunities is a focus of the Refuge System.

SIGNATURE:

Refuge Manager: _____
(Signature) (Date)

CONCURRENCE:

Regional Chief: _____
(Signature) (Date)

MANDATORY 15-YEAR REEVALUATION DATE: _____

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COMPATIBILITY DETERMINATION

USE

Spring Wild Turkey Hunt

REFUGE NAME

Great Swamp National Wildlife Refuge

DATE ESTABLISHED

1960

ESTABLISHING AND ACQUISITION AUTHORITY

Great Swamp National Wildlife Refuge (NWR, refuge) was established primarily under the authorities of the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711, 40 Stat. 755) and the Migratory Bird Conservation Act of 1929 (16 U.S.C. 715-715r, 45 Stat. 1222), as amended, by transfer of approximately 2,900 acres of land donated to the Federal Government by the Great Swamp Committee of the North American Wildlife Foundation.

REFUGE PURPOSES

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

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds”. (Migratory Bird Conservation Act of 1929; 16 U.S.C. 715d)

“...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 ...” (Refuge Recreation Act; 16 U.S.C. 460k-1) *“the Secretary...may accept and use...real...property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors”*... (Refuge Recreation Act; 16 U.S.C. 460k-2, as amended)

“...for 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 ...” (Emergency Wetlands Resources Act of 1986; 16 U.S.C. 3901(b)); and,

“... to conserve (A) fish or wildlife which are listed as endangered species or threatened species ... or (B) plants ...” (Endangered Species Act of 1973; 16 U.S.C. 1534).

“...to secure for the American people of present and future generations the benefits of an enduring resource of wilderness... wilderness areas ... shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness: ...”
(Wilderness Act of 1964; Public Law 88-577; 16 U.S.C. 1131-1136)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The Mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Improvement Act; 16 U.S.C. 668dd (a) (2)).

DESCRIPTION OF PROPOSED USE

(a) What is the use? Is the use a priority public use? The use is a spring wild turkey (*Meleagris gallopavo silvestris*) hunt. Hunting is one of the six priority public uses identified by the National Wildlife Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997.

(b) Where the use would be conducted? Turkey hunting would be allowed on approximately 5,000 acres of the refuge [about 65 percent of the total area (7,735 acres)], which includes the Wilderness Area east of Long Hill Road and Management Area south of White Bridge Road, with the exception of land designated as “Safety Zone.” Currently, turkey populations are found throughout New Jersey where suitable habitat exists [contiguous forest or woodland areas (>10 acres) and associated field edge habitat (Erikson et al. 2009)]. The refuge falls within New Jersey Turkey Hunting Area 10, which maintains viable turkey populations and an annual spring turkey hunt (NJDFW 2012a). The refuge also supports a healthy turkey population.

The 3,660-acre Wilderness Area forms the eastern side of the refuge, and is comprised of bottomland red maple floodplain forest, small upland “islands” of American beech and chestnut oak-dominated hardwood forest, and about 247 acres of open water. The Management Area forms the western side, and is characterized by stands of bottomland and upland forest types (i.e., pin oak – swamp white oak and mesic beech – oak) interspersed among about 840 acres of scrub-shrub habitat, 460 acres of early succession fields, and five impoundments (570 acres). Additionally, Black Brook, Great Brook, Loantaka Brook, and Primrose Brook flow through the refuge and drain into the Passaic River that runs along portions of the western refuge boundary (USFWS 2009). The refuge also has a 64-acre No Entry area, in which hunters are not allowed due to acquisition deed restrictions.

Much of the land adjacent to the refuge is residential, with the exception of four Farmland Preservation properties, a New Jersey Natural Lands Trust property, Somerset County Lord Stirling Park (along the western boundary), and Morris County Great Swamp Outdoor Education Center (along the eastern boundary) (USFWS 2009). Safety Zones (1,329 acres) have been established (marked with pink flagging), and include refuge lands within 450 feet of a building or within 450 feet of any school playground (whether or not occupied). Designated hunter parking lots will be distributed throughout the Management Area and around the perimeter of the Wilderness Area to provide access. A Turkey Check Station (located by the refuge headquarters) will be open during the days of the hunt.

- (c) When would the use be conducted?** The turkey hunt will occur during the spring season, in April and May. The hunt will consist of a 1-day youth hunt at the end of April, followed by a regular hunt during a 1-week period in late May. This regular hunt will be a single 1-week hunting period, as described in the NJDFW regulations for spring turkey hunting season (NJDFW 2012a). Hunting hours will be from one-half hour before sunrise to noon. However, as population surveys are conducted and biological data are collected from harvested birds and assessed annually, season dates may change and the season length may be extended or reduced. Additionally, the refuge manager may, upon annual review of the turkey hunting program, impose further restrictions on hunting, recommend that the refuge be closed to hunting, or further liberalize hunting regulations within the limits of state law. Hunting duration will be reviewed each year as part of the annual hunt plan meeting and are subject to reduction in length at the discretion of the refuge manager.
- (d) How would the use be conducted?** Spring turkey hunting will be conducted within the framework of New Jersey State regulations, Federal regulations in 50 CFR pertaining to the upland game hunting, and refuge-specific regulations. Season dates and bag limits will be managed to ensure that refuge hunts are compatible with the principles of sound wildlife management and otherwise in the public interest, and will be modified, as needed, on an annual basis.

The NJDFW oversees the Statewide turkey hunting program. Hunter numbers and bag limits are based on amount of land open to hunting, hunter densities, and anticipated hunter success ratios. The State is divided into 22 Turkey Hunting Areas; the refuge falls within Turkey Hunting Area 10 (Morris, Union, Essex, Hudson, and Bergen Counties). For each Hunting Area, a lottery system is used to issue hunting permits for five hunting periods and weekly permit quotas determined. Currently, the weekly spring quota for Hunting Area 10 is 160 male birds (NJDFW 2012a). The refuge will work in cooperation with NJDFW to design and carry out a spring turkey hunt. For example, not including the youth hunt, based on 5,000 acres (~8 mi²) of suitable turkey habitat on the refuge and a hunter density of two hunters/mi², a total of 16 hunters would be allowed on the refuge over a 1-week hunting segment (16 hunters per week). Hunters would be allowed to harvest male turkeys with a

shotgun using non-toxic shot or bow and the bag limit would be one male turkey per permit. Total hunters would be 16 at 5 days, equaling 80 hunter half days. The hunter success ratio in New Jersey typically is about 16 percent. However, for a population that is legally being hunted for the first time, harvest rates around 30 percent can be expected (T. McBride, NJDFW Turkey Project Leader, Personal Communication). Based on a 30 percent hunter success ratio, only five male turkeys would be anticipated to be harvested the first season. After the first season, hunter success ratios likely would drop to 16 percent. Hunters would be required to bring harvested turkeys to the refuge Turkey Check Station where biological data on the animals would be collected by refuge staff. Regulations consistent with a Turkey Hunting Plan will be enforced.

- (e) Why is this use being proposed?** The U.S. Fish and Wildlife Service (Service) has long recognized that hunting is an integral part of a comprehensive management program, and that significant positive benefits can be attributed to a well-managed hunt and a quality public hunting experience. Under current Service policy, hunting is an acceptable and traditional form of recreation, particularly in areas where it historically has been practiced. One of the refuge strategic goals as well as a Visitor Services goal is to provide quality wildlife dependent recreational opportunities in the “Big Six,” which includes hunting. When it is done responsibly, the introduction of a spring wild turkey hunt on the refuge is consistent with this goal.

Wild turkeys currently are common throughout New Jersey, but this was not always the case. For more than 100 years (mid-1800s – 1970s) turkeys were gone from the State due to unregulated killing for food and habitat changes. In 1977, the NJDFW, in cooperation with the New Jersey Chapter of the National Wild Turkey Federation, reintroduced turkeys to New Jersey, beginning with an initial release of 23 birds from Vermont, and additional birds from Arkansas (Hahn and Penkala 1977, Penkala and Erickson 1978). In 1979, biologists and technicians began live-trapping and relocating birds to establish populations throughout the State. By 1981, the population was able to support a spring hunting season, and in December 1997, a limited fall season was initiated. In 1986, the NJDFW released wild turkeys into the Great Swamp NWR. The birds were from the in-state trap and transfer program. Historically, 4 years after an area had received trap and transfer birds, the population was considered stable and able to sustain a limited spring turkey hunting season (Robert Erickson, Regional Biologist, NWTF, Personal Communication). Currently, the New Jersey’s turkey population is estimated at more than 20,000 birds, with an annual harvest of more than 3,000 birds Statewide (T. McBride, NJDFW Turkey Project Leader, Personal Communication). Allowing a limited wild turkey hunt on the refuge is not likely to negatively impact the local or regional turkey population.

AVAILABILITY OF RESOURCES

The Wild Turkey Hunting Program will be administered by the Deputy Refuge Manager through Administrative, Biological, Maintenance, and Visitor Services staff. The Heavy Equipment Operator will maintain Hunter Parking Lots, open only on the days of the hunt. Resource impacts will be monitored by a Wildlife Biologist and resource protection will be provided by a Federal Wildlife Officer. Volunteers will assist staff with carrying out population surveys, marking Safety Zone and No Entry areas, and collecting information on harvested turkeys at the Turkey Check Station.

Annual costs associated with the administration of the annual turkey hunt on the refuge are estimated below:

■ Review annual turkey hunting program, meet with staff, and conduct administrative tasks

GS 13 Refuge Manager:	1 day = \$358.36
GS 12 Deputy Refuge Manager:	3 days = \$1,040.88
GS 12 Visitor Services Manager:	4 days = \$864.00

■ Organize and conduct annual turkey polt survey, analyze data, and prepare report

GS 12 Deputy Refuge Manager:	1 day = \$346.96
GS 12 Visitor Services Manager:	4 days = \$1,040.88
GS 11 Wildlife Biologist:	8 days = \$2,051.20
GS 9 Visitor Services Specialist:	3 days = \$519.00
GS 9 Federal Wildlife Officer:	3 days = \$615.12

■ Issue hunting permits and maintain a hunter database

GS 4 Administrative Assistant:	22 days = \$873.00
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■ Provide information to the public about the turkey hunt

GS 12 Visitor Services Manager	1 day = \$216.00
GS 9 Visitor Services Specialist:	2 days = \$346.00
GS 4 Administrative Assistant:	12 days = \$455.00

■ Maintain and/or prepare (mowing) hunter parking lots, maintain pink flagging to designate “Safety Zone”, open and close gates, place hunter lot number signs.

GS 10 Engineering Equipment Operator:	3 days = \$610.32
GS 7 Maintenance Worker:	3 days = \$503.04
GS 11 Wildlife Biologist:	3 days = \$769.20

GS 12 Visitor Services Manager: 1 day = \$216.00
GS 9 Visitor Services Specialist: 2 days = \$346.00

■ Operate Turkey Check Station

GS 12 Visitor Services Manager: 4 days = \$864.00
GS 11 Wildlife Biologist: 5 days = \$1,282.00
GS 9 Visitor Services Specialist: 3 days = \$519.00

■ Monitor hunting activities pre-hunt, during the hunt, and post-hunt to ensure hunters and visitors are in compliance with all applicable laws and regulations. Law Enforcement also is available to assist with search and rescue and emergency response.

GS 9 Federal Wildlife Officer: 7 days = \$1,435.28

■ Analyze harvest data and prepare annual Turkey Hunting Program report

GS 11 Wildlife Biologist: 7 days = \$1,794.80

Total cost of approximately \$17,000.00

FY 2012 Budget Allocations:

- Employee salaries and benefits = \$913,000.00
- Fixed costs (utilities, fuel, administrative) = \$110,000.00
- Discretionary funds (management capability) = \$344,000.00
- Total available funds for FY 2012 = \$1,367,000.00

ANTICIPATED IMPACTS OF THE USE

Effects on Target Species Populations: Since male turkeys will mate with more than one hen, a limited spring gobbler season should have little impact on breeding success and size of the turkey population. However, other factors such as wet spring seasons that reduce polt survival, predation by avian and mammalian predators, additional human-caused mortality, and disease, also influence mortality rates, and under certain conditions harvest-related mortality could be additive (Diefenbach et al. 2011). Thus, impacts of hunting when combined with other natural sources of mortality could negatively impact the refuge turkey population. There are many factors that can contribute to changes in the turkey population, and very few of these factors (i.e. spring rainfall) can be controlled by wildlife managers. One factor that wildlife managers can control is the length and timing of hunting seasons. Spring gobbler (males) seasons are set to coincide with the time when hens begin to incubate their eggs. In New Jersey, this occurs in late April. Starting a spring season too early can be detrimental to turkey populations because hens abandon nests more readily if they are disturbed before they start to incubate. Additionally, illegal take of hens occurs more frequently if a spring season starts before incubation, when hens

are still mobile. The second peak of gobbling activity occurs at the start of incubation, when nesting hens are no longer available to gobblers. The spring season is timed to better coincide with this peak in gobbling activity (2012-13 NJ Hunting and Trapping Digest)

If not accounted for in planning, high hunter success ratios could further impact the population. Based on State hunter success ratios, the estimated first-year harvest for the refuge would be five male birds. Harvest should decrease in subsequent years if the hunt period and hunter density remain the same due to a more “educated” turkey population. Close monitoring will be necessary to document factors impacting the refuge turkeys to ensure a viable population and sustainable harvest.

Safety is a major consideration related to turkey hunting on the refuge. Much of the land adjacent to the refuge is residential and some area residents have expressed concern over the use of firearms for hunting. To address these concerns, those portions of the refuge in which turkey hunting will occur will be closed to all other public uses on the scheduled days of the 5-day hunt. Additionally, “Safety Zones” are delineated, within which hunting will not be permitted.

Effects on Wildlife: Direct impacts on wildlife from disturbance can be expected wherever humans have access to an area, and the degree varies depending on a number of factors (e.g. habitat type, species, degree and duration of disturbance, etc.). In general, human presence disturbs most wildlife, which typically results in a temporary displacement with no long-term effects on individuals or populations. Responses of wildlife to human activities include avoidance or departure from the site, the use of sub-optimal habitat, altered behavior or habituation, or in some cases, attraction (Owen 1973, Erwin 1980, Williams and Forbes 1980, Burger 1981, Kaiser and Fritzell 1984, Morton et al. 1989, Ward and Stehn 1989, Belanger and Bedard 1990, Kahl 1991, Klein 1993, Whittaker and Knight 1998). Disturbance can have other effects on wildlife including shifts in habitat use, abandonment of habitat, and an increase in energy expenditure (Knight and Cole 1991). The hunt will cause some level of disturbance to non-target species as hunters walk to their hunting locations and discharge shotguns.

Hunters may temporarily disrupt feeding and resting of migrating birds. Additionally, off-trail hiking by turkey hunters could disturb low-elevation or ground nesting breeding birds as they attempt to establish and settle into nest territories, build nests, or incubate eggs. State-listed species that could possibly be present and active on the refuge during the turkey hunt include State-endangered peregrine falcon, red-shouldered hawk, bald eagle, vesper sparrow, blue-spotted salamander and bobcat, and the State-threatened barred owl, long-eared owl, red-headed woodpecker, and wood turtle. While temporary disturbance to wildlife may occur on the refuge due to the turkey hunt, long-term negative effects are unlikely due to the limited number of hunters distributed over about 5,000 acres, the short duration of the hunt, the type of hunting, which requires stealth, and the fact that hunters frequently become sedentary once set up to hunt.

Effects on Threatened and Endangered Species: Two federally listed species occur on the refuge, the endangered Indiana bat and the threatened bog turtle. Indiana bats are known to forage and roost throughout the Wilderness and Management Areas during the summer maternity period (Kitchell 2008). Bats arrive in April and remain on the refuge into October, after which they migrate to winter hibernacula (USFWS 2007). The refuge also provides foraging, nesting, and hibernation habitat for the bog turtle. A small population occurs in a few acres of emergent wetland habitat in a refuge Safety Zone area. Additionally, several wetlands associated with seeps that historically have supported bog turtles are scattered throughout the refuge; in the recent past, single occurrences of the species have been documented in two of these areas. Disturbance by turkey hunting to Indiana bats is unlikely because bats are rare, they roost during the day under the exfoliating bark of trees, and are they most active at night. Also, it is very unlikely that a hunter will encounter a bog turtle, as the primary population falls within a Safety Zone and much of the area is protected by fencing. Additionally, because turkeys are an upland species, hunters are less likely to enter or remain in wetland habitats, where turtles are found. In fact, the type of habitat that bog turtles use (characterized by shallow water and deep “mucky” soils USFWS 2012) likely will be avoided by hunters as they travel to their desired turkey hunting areas.

Effects on Vegetation: Spring turkey hunting could directly impact native vegetation, depending on the time of year, length of season, number of hunters, and extent of hunt locations. Spring is the time ephemeral plants are in bloom and are most vulnerable to trampling. Short-term, trampling of vegetation by hunters will occur to some degree throughout the refuge during the turkey hunting season. Vegetation will be compressed in the designated grass parking lots and trails could be created by hunters. Plant species vary in their resistance to trampling, which can lead to changes in plant communities. In general, plant diversity has been shown to increase with slight use and to decrease as use intensifies (Liddle 1997). Regardless, the physical effects of turkey hunting on rare plant communities and vegetation, including wetland habitat are expected to be minimal. All-Terrain Vehicles (ATV) will not be permitted on the refuge, and the high acreage to hunter ratio will minimize foot traffic.

Effects on Soil: Soils can become compacted and eroded as a result of continued foot traffic, and soils associated with wetland habitats have been rated as either high or very high in their potential for compaction (Bell 2002). Recreation impacts to soils from trampling indirectly affects vegetation by loosening the soil’s surface layers and compacting the underlying layers. Coupled with a loss of plant cover, this leads to increased soil erosion (Hammit 1986). Trampling also decreases the abundance and diversity of soil organisms such as microbes, earthworms, arthropods, snails, and slugs, which often play a major role in nutrient cycling (Liddle 1997). However, impacts on soils from hunters during the turkey hunt likely will be minimal. Because turkeys are an upland species, hunters are less likely to enter or remain in wetland habitats, where the potential for high soil compaction exists. Additionally, the use of ATVs, which can cause soil erosion, is not permitted. Further, in areas where new vegetation is

trampled from off-trail foot-traffic, effects likely will be temporary due to the low number of hunters (16) allowed on the refuge and the short duration of the hunt (5 half days). In general, the soils throughout the refuge (predominantly poor, to poorly drained silt loam, stratified lacustrine sand, silt, and clay), by nature, allow vegetation such as grasses, legumes, wild herbaceous plants, hardwoods and coniferous trees to recover rather quickly (NRCS 1976).

Effects on Hydrology and Water Quality: The refuge minimizes adverse effects on water resources in a variety of ways. Trails are placed in areas that are not subject to high levels of erosion or adjacent to sensitive areas, to minimize erosion and adverse impacts to hydrology and water quality. The refuge also does not permit the public to drive off designated refuge roads or to use ATVs, which can cause depressions in the soil and divert water from original drainage patterns. Activities associated with turkey hunting have the potential to impact refuge water resources. For example, because hunters are not restricted to using only trails designed for other public use activities, they may travel through areas that are susceptible to erosion and subsequent sedimentation. In such areas, concentrated off-trail foot traffic can affect the hydrology of an area by removing vegetation, compacting the soil, and causing water to channel and pool. Long-term, this can result in some drainages becoming dry while others accelerate erosion by being forced to carrying more water. However, impacts of hunters on the hydrology and water quality should be negligible. The duration of the hunt is short (5 days), hunter numbers are limited (16), and hunters will be dispersed across approximately 5,000 acres of the refuge, which will virtually eliminate repeated erosive actions on soils.

PUBLIC REVIEW AND COMMENT

This compatibility determination is being released concurrent with the draft Comprehensive Conservation Plan/Environmental Assessment for a 45-day review and comment period.

DETERMINATION (CHECK ONE BELOW):

Use is not compatible

Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY

To minimize inconvenience to the non-hunting public who use the refuge, signs that portions of the refuge will be closed on the scheduled days of the hunt will be posted at public access points, and the closure publicized in local newspapers. The timing of the hunt also will coincide with the end of the peak bird migration season to reduce conflicts with other public uses.

To maintain a safe hunt, Safety Zones in which hunters are not permitted to carry a loaded firearm or nocked arrow will be established and delineated with pink flagging. A no hunt buffer zone will be flagged around the Morris County Park Commission's Outdoor Education Center.

Carrying a loaded firearm within 450 feet or a nocked arrow within 150 feet of a building or within 450 feet of any school playground (whether or not occupied) is prohibited. Loaded firearms also will not be permitted on public roads and in parking areas. Recreational trails will be closed during the hunt to maintain visitor safety and minimize other public use conflicts.

To reduce the level of disturbance to wildlife, the number of hunters on the refuge will be limited; initially, a density of two hunters per square mile will be allowed. Hunter parking lots will be established to help distribute hunters across the refuge. Vehicles will be restricted to public roads and in designated parking areas, use of ATVs will be prohibited, target practice will be prohibited, and fires and camping will not be permitted. Hunters will be required to be out of the field by 12 noon. Additionally, driving or chasing turkeys to put them in range of other hunters will be prohibited.

To monitor the turkey population, the refuge will conduct annual gobbler and polt surveys. Additionally, hunters will be required to bring their harvested turkeys to the refuge Turkey Check Station so that biological data can be collected [spur length, beard length, weight, etc.]. An annual Turkey Hunt Plan will be prepared, and seasons will be adjusted if needed, as part of an adaptive management scheme.

JUSTIFICATION

Public hunting, and more specifically wild turkey hunting, will not prevent the refuge from fulfilling the purposes of the Fish and Wildlife Act (1956) or the mission of the refuge system for conserving, managing, restoring, and protecting wildlife resources. Hunting is one of the six priority public uses defined by the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997. The Act states that hunting, if compatible, is to receive enhanced consideration over other general public uses in refuge planning and management. More specifically, the refuge mission instructs the refuge to provide for fish and wildlife-oriented recreation; a well-managed wild turkey hunting season provides that opportunity.

The Service's policy is to provide expanded opportunities for recreational, public hunting when it is compatible with the Refuge System mission and specific refuge purposes, and consistent with sound wildlife management and public safety. We ensure that this use receives enhanced attention during planning and management. As listed in the purposes section of this compatibility determination, the refuge was established and subsequently land was acquired for a total of six purposes. Turkey hunting will not materially interfere with or detract from the purposes related to wildlife conservation, because turkeys are common throughout New Jersey wherever there is suitable habitat. There is no evidence that a permitted regulated turkey hunt on the refuge will significantly impact the local or regional turkey population, other wildlife, the refuge environment, adjacent lands, or nearby residents. Hunting will not materially interfere with or detract from the purposes related to migratory bird conservation because the numbers of

hunters and duration of the hunt are regulated to minimize impacts associated with human disturbance on migrating birds. Hunting will not materially interfere with or detract from the mission of the Service, because providing hunting opportunities is a focus of the Refuge System.

SIGNATURE:

Refuge Manager: _____
(Signature) (Date)

CONCURRENCE:

Regional Chief: _____
(Signature) (Date)

MANDATORY 15-YEAR REEVALUATION DATE: _____

LITERATURE CITED

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COMPATIBILITY DETERMINATION

USE

Special Birding Events

REFUGE NAME

Great Swamp National Wildlife Refuge

DATE ESTABLISHED

1960

ESTABLISHING AND ACQUISITION AUTHORITY

Great Swamp National Wildlife Refuge (NWR, refuge) was established primarily under the authorities of the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711, 40 Stat. 755) and the Migratory Bird Conservation Act of 1929 (16 U.S.C. 715-715r, 45 Stat. 1222), as amended, by transfer of approximately 2,900 acres of land donated to the Federal Government by the Great Swamp Committee of the North American Wildlife Foundation.

REFUGE PURPOSES

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

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds”. (Migratory Bird Conservation Act of 1929; 16 U.S.C. 715d)

“...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 ...” (Refuge Recreation Act; 16 U.S.C. 460k-1) *“the Secretary...may accept and use...real...property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors”*...(Refuge Recreation Act; 16 U.S.C. 460k-2, as amended)

“...for 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 ...” (Emergency Wetlands Resources Act of 1986; 16 U.S.C. 3901(b)); and,

“... to conserve (A) fish or wildlife which are listed as endangered species or threatened species or (B) plants ...” (Endangered Species Act of 1973; 16 U.S.C. 1534).

“...to secure for the American people of present and future generations the benefits of an enduring resource of wilderness... wilderness areas ... shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness: ...” (Wilderness Act of 1964; Public Law 88-577; 16 U.S.C. 1131-1136)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The Mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Improvement Act; 16 U.S.C. 668dd(a)(2)).

DESCRIPTION OF PROPOSED USE

(a) What is the use? Is the use a priority public use?

The use is special birding events including, but not limited to, the “World Series of Birding” (WSB), Christmas Bird Count (CBC), “Big Sit” (BS), and “Owl Prowls” (OP).

WSB: The WSB is a 24-hour competitive birding event held throughout the State of New Jersey that typically takes place in mid-May to coincide with spring bird migration. The event is hosted by the New Jersey Audubon Society (NJAS) and is used as a fundraiser for numerous conservation organizations. Many teams (usually 3-6 individuals per team) raise money from pledges based on the number of bird species they identify by sight and sound during the course of the 24-hour contest. Annually, 15-25 teams have requested permission to participate in the event on the refuge since the WSB began in 1984. In addition to the event itself, a small number of scouting days are designated during the two weeks leading up to the event.

CBC: The CBC is an annual early-winter bird census sponsored by the National Audubon Society (NAS) that began in 1900. It is the longest running citizen science survey in the world and has grown to more than 2,000 counts done in countries throughout the Western Hemisphere. CBC volunteers follow specific routes through designated 15-mile diameter “circles” counting every bird seen or heard during the count period. The refuge lies within the “Great Swamp-Watchung Ridges” circle (circle code NJGS). CBCs have been done on and around the Great

Swamp since before the refuge was established and have continued annually since then. In recent years, four teams have requested permission to participate in the CBC on the refuge.

BS: The BS is an annual, international, noncompetitive birding event hosted by Bird Watcher's Digest. The refuge has hosted the event every fall since 2007 to coincide with the start of NWR Week. The Friends of Great Swamp NWR (FOGS) organizes the event and has used it as a fundraiser. The goal of the BS is to record all birds seen or heard in the area during a 24-hour period while remaining within a 17-foot diameter circle. The refuge's count circle is laid out in a publically accessible area and, at any given time, 6-12 participants are within the circle searching for birds. Many visitors (approximately 110 in 2011) stop by during the event to lend a hand and enjoy the event.

OP: Since 2008, the refuge has granted permission to The Raptor Trust (TRT), a local non-profit bird rehabilitation center, to lead guided night tours that focus on seeing or hearing owls. TRT staff lead between one to three OPs on the refuge annually during the fall and winter months when nights are longer and owls are easier to locate. Group size is limited to 20 participants. TRT uses the event as a fundraiser through the collection of voluntary donations from participants.

Special birding events are forms of wildlife observation and as such are a priority public uses (National Wildlife Refuge System Improvement Act of 1997; Public Law 105-57).

(b) Where would the use be conducted?

WSB: The WSB would be conducted throughout the entire refuge, including areas generally closed to the public.

CBC: The CBC would be conducted throughout the entire refuge, including areas generally closed to the public.

BS: The BS would be conducted in a publically accessible area of sufficient size to safely accommodate the count circle and stream of participants and visitors who attend throughout the day. To date, the parking area in the refuge's "Overlook" has been used for this event.

OP: OPs are conducted along Pleasant Plains Road which is open to the public during the day.

(c) When would the use be conducted?

WSB: The WSB typically takes place on a Saturday in mid-May and runs from midnight to midnight. The refuge has allowed scouting two weeks before the event on certain days and at certain times. Both day and night scouting has been allowed. In recent years, 6 scouting days have been allowed.

CBC: The CBC typically takes place within a week of Christmas Day and runs from several hours before sunrise to several hours after sunset.

BS: The BS has typically been held in mid-October on the first Saturday of NWR Week and runs from midnight to midnight, though participants have typically departed by 9 p.m. The general public is restricted to visiting during normal refuge hours (i.e. between sunrise and sunset).

OP: OPs have been conducted typically from October-February between 8-10 p.m. when the refuge is closed to the public for the night.

(d) How would the use be conducted?

WSB: It is important to note that the refuge does not administer the WSB event itself but rather controls participant access to the refuge in areas and at times typically closed to the public. WSB teams requesting special access must secure a Special Use Permit (SUP) in advance of the event. SUPs are issued during a 2-week window from the Monday of the week before the event until the Friday prior. WSB participants not requesting special access do not require a SUP. Disabled individuals in need of assistance may qualify for special accommodations by making arrangements in advance with refuge staff. Teams are free to scout the refuge on the dates, times, and in the locations permitted. Access to areas closed to the public is by foot travel only. On the day of the event, teams record all of the bird species seen or heard on the refuge during all or part of the 24-hour contest period. Highly competitive teams generally spend a short time on the Refuge and quickly leave to travel the State in search of additional species. Information on the species identified is reported to Audubon as part of the competition. Teams also submit a list of the species recorded at Great Swamp to the refuge to supplement avian monitoring data.

CBC: CBC teams requiring access not typically granted to the public must request a SUP before being allowed to participate in the event on the refuge. Access to areas closed to the public is by foot travel only. CBC participants not requesting special access do not require a SUP. In recent years, four teams have requested SUPs. Teams larger than 10 individuals are required to split into groups of no more than 10 to minimize disturbance. Teams typically start several hours before sunrise and finish several hours after sunset. On the day of the event, teams record all of the bird species seen or heard on the Refuge during the count period. Teams are required to submit a list of the number of birds recorded by species at Great Swamp to the refuge to supplement avian monitoring data.

BS: A SUP is required for participation in the BS. Participants are allowed to enter the refuge at midnight and may stay until the event ends 24-hours later. The event, however, has typically ended by 9 p.m. A 17-foot diameter circle is laid out with chalk powder in the refuge's Overlook

parking area within which participants must remain to officially record bird observations. Participants bring their own lawn chairs, binoculars, and spotting scopes and are free to leave the count circle at any time. A portable canopy is erected to provide shade and tables are set up for refreshments and information in the adjacent kiosk. A running tally of bird observations is maintained on a white board for the public's enjoyment. Since the count circle (including a buffer for safety) occupies a large portion of the parking area, additional parking has been made available in the "turnaround" northwest of the Great Brook Bridge. Visitors are allowed to observe the event during normal refuge hours. BS participants are required to submit a list of the number of birds recorded by species to the refuge to supplement avian monitoring data.

OP: The refuge has issued a SUP to TRT for one to three OPs each season since the event began. Group size is limited to 20 participants. TRT staff lead a small caravan of vehicles down Pleasant Plains Road after sundown in search of owls. The caravan makes several stops either along the road or in refuge parking areas to listen for owls. TRT naturalists may also attempt to "call" owls to solicit a response. TRT is required to submit a report to the refuge of the number of participants involved and the number and species of owls identified during each outing.

(e) Why is this use being proposed?

These special birding events are all forms of wildlife observation and, as such, are priority wildlife-dependent public uses. Refuges have a proactive responsibility to provide such uses when appropriate and compatible. In 1994, a compatibility determination (CD) was completed for the WSB given the scope and unique nature of the event. The use was determined to be compatible at that time. The current CD expands this focus to include additional special birding events, some of which (BS and OP) were not occurring in 1994. Note that wildlife observation in general is addressed in a separate CD.

AVAILABILITY OF RESOURCES

The resources necessary to provide and administer this use are available within the current and anticipated refuge budgets. Staff time associated with administration of this use is related to coordinating with the various permittees (NJAS, NAS, FOGS, TRT), updating SUPs every year, issuing SUPs to the various requesters and answering questions, law enforcement to ensure safety and compliance during the events, follow-up contacts to ensure required reports are submitted to the refuge, reevaluating the appropriateness and compatibility of this use every 15 years, and monitoring to ensure that the conditions and stipulations of the SUPs and CD are followed. The deputy refuge manager, Federal wildlife officer, and office automation assistant have primary responsibility for these duties which require approximately 14 days of staff time per year.

- GS-12 Deputy Refuge Manager: 3 days = \$1,041.00

- GL-09 Federal Wildlife Officer: 3 days = \$639.00
- GS-04 Office Automation Assistant: 8 days = \$1,003.00
- Office supplies: postage, etc. = \$200.00
- Total = \$2,883.00

ANTICIPATED IMPACTS OF THE USE

The special birding events associated with this use have been occurring annually on the refuge, in some cases, since the refuge was established, with negligible impacts. Impacts are anticipated to remain negligible in the future. Given the nature of these events, participants strive to minimize disturbance in order to maximize bird identification opportunities. All events are conducted in ways, at times, and in locations to minimize disturbance to wildlife and other refuge resources while providing outstanding opportunities for wildlife observation and environmental education and interpretation. In the case of the WSB, the impact on waterfowl has been minimal since over 90 percent of the ducks which use the refuge in spring migrate north prior to the event. In 2011, vehicular access to roads in closed areas was permanently terminated which resulted in fewer teams participating in the event on the refuge. These changes have further lessened potential impacts. The CBC is conducted on foot by groups limited to no more than 10 participants. The BS is held in a refuge parking area with a solid gravel base which minimizes any physical disturbance associated with the event. Similarly, OPs are restricted to Pleasant Plains Road and refuge parking areas which are surfaced with gravel or asphalt. In total, these events occupy the refuge for no more than 12 days (some partial) per year. Disturbance to wildlife, including species of conservation concern, has been and is expected to remain negligible.

The presence of people on refuge trails and roads can lead to displacement of animals from trails, although disturbance usually is a negligible influence on large mammal distributions and movements (Purdy et al. 1987; Boyle and Samson 1985). The effects on other forms of wildlife appear to be short-term with the exception of breeding bird communities. A study by Miller, Knight, and Miller (1998) indicates that species composition and nest predation was altered adjacent to trails in both forested and grassland habitats. It appears that species composition changes are due to the presence of humans and not the trail or roadway itself. On the other hand, nest predation does appear to be a function of the trail which allows access to mammalian nest predators (Miller, Knight, and Miller 1998). With respect to Great Swamp, we anticipate that similar impacts will occur here as well, particularly in high visitor use areas. Negative influences may be amplified during breeding seasons, especially to ground nesting birds and amphibians that may be crossing trails. Martinez-Abraín et al. (2010) conducted a systematic review of the effects of recreational activities on nesting birds of prey. They detected an overall statistically significant impact on the displacement of nests from roads and concluded that the magnitude of the displacement was likely to be biologically relevant. Siemers and Schaub (2011) found that bat foraging efficiency decreased as traffic noise increased. Disturbance to forest birds at Great

Swamp is complex and involves many factors. Important factors include the height and density of vegetation; topography; behavioral differences in species for ground nesting birds, low nesting birds, or foraging birds; and species response to human behaviors. Vegetation density and topography can obscure line of sight for birds. Some birds are more tolerant than others with respect to human proximity, while some birds are more apt to flee than others, (e.g. wood ducks).

Direct impacts on wildlife in the form of disturbance can be expected wherever humans have access to an area, and the degree may vary depending on the habitat type. In general, human presence disturbs most wildlife, which typically results in a temporary displacement without long-term effects on individuals or populations. Rochelle, Pickering, and Castley (2011) examined studies of the impacts of nature-based recreation such as hiking, wildlife viewing, cycling, and horse riding on birds. Of the 69 studies they considered, 88 percent found negative impacts including changes in bird physiology, immediate behavior, abundance, and reproductive behavior. Some species, such as wood thrush, will avoid areas frequented by people, such as developed trails and buildings. Other species, particularly highly social species such as eastern tufted titmouse, Carolina chickadee, or Carolina wren, seem unaffected or even drawn to a human presence. When visitors approach too closely to nests, they may cause the adult bird to flush exposing the eggs to weather events or predators. Calling owls during OPs may cause a temporary impact to the individuals from which a response is elicited. Owl calling, however, is infrequent (1-3 nights per year) and non-invasive and is unlikely to cause any more than a short-term impact in the immediate surrounding area. The extent of disturbance along trails depends on a number of factors including visibility, determined by the density of vegetation through which the trail is laid. Various studies have shown that edge effect is variable and conservation design recommendations related to public use areas vary from 50 meters (164 feet) (Paton 1994) to about 90 meters (300 feet) (Robbins et al 1989; Brittingham and Temple 1983, Jones et al. 2000). Since the trails do not occur in the highest quality habitat, we anticipate that impacts will be minimal.

OPs and the BS are confined to roadways and parking areas. WSB and CBC participants are free to roam on foot throughout the refuge. The use of trails and gravel roads could lead to soil compaction, exposure of tree roots, and the modification of plant species 1 to 2 meters on either side of the trail which is a function of soil compaction, invasive species, and direct trampling of plants (Kuss 1986). The refuge will continue to use boardwalks, woodchips, erosion control, and user education to protect plant species and habitats along trails and roadways. Providing trails concentrates use to areas that can be routinely maintained to ensure a quality visitor use experience while also minimizing impacts to vegetation. The implementation of boardwalks and use of woodchips along trails has reduced impacts to vegetation and reduced soil erosion along trails. Some trampling of vegetation by special birding event participants is unavoidable. Such damage, however, is transient and inconsequential. People and vehicles can, however, be vectors for invasive plants when seeds or other propagules are moved from one area to another. Once established, invasives can out-compete native plants, thereby altering habitats and indirectly

impacting wildlife. The threat of invasive plant establishment is an ongoing issue requiring continual monitoring and, when necessary, treatment. Staff will work with permittees to prevent the spread of invasives and eradicate new infestations following an Early Detection – Rapid Response strategy.

This use will have minimal impacts to water quality because special birding events are not physically disruptive to natural resources and are either held in developed areas (BS and OP) away from waterways and bodies of water or managed to limit and disperse human impacts (WSB and CBC). Where trails are involved, the majority are set back from water. In instances where trails are adjacent to water, pollutants and sediments are unlikely to be introduced to waterways given how lightly the trails will be used. Further, given the flat topography and rich vegetative cover characteristic of most of the refuge, sedimentation is unlikely to develop.

PUBLIC REVIEW AND COMMENT

This compatibility determination is being released concurrent with the draft Comprehensive Conservation Plan/Environmental Assessment for a 45-day review and comment period.

DETERMINATION (CHECK ONE BELOW):

Use is not compatible

Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY

- Special birding events are administered through SUPs issued every year. Stipulations are listed as “Special Conditions” in the SUPs.
 - Stipulations/special conditions for all permittees are as follows:
 - The permit is not transferrable.
 - All vehicles must be parked in designated refuge lots.
 - SUP must be prominently displayed on the dash of each permittee’s vehicle and a copy must also be in the possession of each team or group while on the refuge. The permit must be presented to refuge officials upon request.
 - Permittees must obey all refuge rules and regulations, including the speed limit along Pleasant Plains Road (15 mph unless otherwise posted).
 - A report listing all birds identified must be submitted to the refuge manager within two weeks of the completion of the event.
 - Access to the refuge during nighttime (i.e. before sunrise and after sunset) is permitted.

- The refuge reserves the right to postpone or cancel any activity that may interfere with public safety or refuge management activities. Access to the refuge will not be permitted during the annual refuge deer hunt.
- All other refuge rules and regulations remain in force.
- Any violation of permit conditions may result in the denial of future permits.
- Additional stipulations/special conditions for the WSB are as follows:
 - Access to the Management (i.e. closed) and Wilderness Areas is by foot travel only.
 - Individuals must notify Refuge Headquarters before each visit into the Management Area and before night visits into the Wilderness Area.
 - Participants must stay out of the fields along Pleasant Plains Road, and away from the blinds at the Wildlife Observation Center, during daytime hours.
- Additional stipulations/special conditions for the CBC are as follows:
 - Access to the Management and Wilderness Areas is by foot travel only.
 - Groups are limited to a maximum of 10 individuals. If more than 10 individuals are on a team, the team must split into smaller groups to minimize disturbance. Should the team split up, each group must have their own copy of the SUP.
- Additional stipulations/special conditions for the BS are as follows:
 - Access to the Management Area is prohibited.
- Additional stipulations/special conditions for the OP are as follows:
 - Permittee will provide a brief educational overview of the refuge to program participants as outlined by refuge staff and provided in the Great Swamp NWR Fact Sheet.
 - Access to the Management Area is prohibited.

JUSTIFICATION

The special birding events associated with this use are forms of wildlife observation and, as such, are priority wildlife-dependent public uses. Refuges have a proactive responsibility to provide such uses when appropriate and compatible. The abundance and diversity of bird species on the refuge makes it a popular site for birding events. Renowned birders have participated in these events generating recognition and support for the refuge and the Refuge System's conservation mission. Many others have simply enjoyed the opportunity to connect with nature through these unique events. Significant funding for wildlife conservation has been raised through these events which also supports the Refuge System's conservation mission. Through these events, the refuge has developed stronger relationships with conservation partners. In addition, the refuge gains valuable avian data at no additional cost from experienced bird watchers. Over time, the

species lists submitted from the various events have provided information useful for monitoring bird populations and updating the refuge's bird list. To date, any impacts associated with these events have been transient and negligible.

Allowing special birding events at Great Swamp NWR will not materially interfere with or detract from the fulfillment of the migratory bird, habitat protection, or wetland purposes of the refuge because the use occurs either in already developed areas (parking lots, gravel and paved roads) or is tightly managed to limit participant density and resultant impacts. The use will not materially interfere with or detract from the wilderness purpose of the refuge because the impacts are similar to those resulting from normal public use, do not involve any actions generally prohibited in Wilderness, and are tightly managed to minimize disturbance. The use will not materially interfere with or detract from the mission of the National Wildlife Refuge System mission because special birding events will be carefully managed to avoid anything more than localized, transient impacts or disturbance.

SIGNATURE:

Refuge Manager: _____
(Signature) (Date)

CONCURRENCE:

Regional Chief: _____
(Signature) (Date)

MANDATORY 10-YEAR REEVALUATION DATE: _____

LITERATURE CITED

Martinez-Abraín, A., Oro, D., Jiménez, J., Stewart, G., and Pullin, A. A systematic review of the effects of recreational activities on nesting birds of prey. *Basic and Applied Ecology* 2010(11):4.

Rochelle, S., Pickering, C., and Castley, G. A review of the impacts of nature based recreation on birds. *Journal of Environmental Management* 2011(92):10.

Siemers, B.M. and Schaub, A. Hunting at the highway: traffic noise reduces foraging efficiency in acoustic predators. *Proceedings of the Royal Society B-Biological Sciences* 2011:278(1712).

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Swamp National Wildlife Refuge

Use: Alternate Forms of Transportation

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate

Appropriate

Refuge Manager: _____

Date: _____

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____

Date: _____

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

FWS Form 3-2319
02/06

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Swamp National Wildlife Refuge

Use: Alternate Forms of Transportation

NARRATIVE:

The proposed uses are biking and horseback riding. Although these uses are not priority public uses, they do support wildlife observation, which is a priority public use. These uses may provide opportunities for visitors to observe and learn about wildlife, habitats, and refuge lands firsthand and at their own pace in an unstructured environment. These uses may also enhance the public's appreciation for wildlife conservation and land protection. It is anticipated that participation in these uses will produce a more informed public, with an enhanced stewardship ethic and enhanced support and advocacy for the U.S. Fish and Wildlife Service (Service) and natural resources as a whole.

These uses are low impact and low cost. The area where these uses are allowed on the refuge is Pleasant Plains Road, which is used to access a number of public use areas, including the Helen C. Fenske Visitor Center, and the refuge administrative offices.

These uses are consistent with the goals and objectives in the comprehensive conservation plan, particularly goal four, which provides 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 understanding and support of the refuge's mission. The uses will provide wholesome, safe outdoor recreation in a scenic setting. In addition, these uses promote Let's Go Outside, Connecting People with Nature, and other health-related initiatives that the Service supports.

COMPATIBILITY DETERMINATION

Use:

Alternate forms of transportation on Pleasant Plains Road.

REFUGE NAME

Great Swamp National Wildlife Refuge

DATE ESTABLISHED

1960

ESTABLISHING AND ACQUISITION AUTHORITY

Great Swamp National Wildlife Refuge (NWR, refuge) was established primarily under the authorities of the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711, 40 Stat. 755) and the Migratory Bird Conservation Act of 1929 (16 U.S.C. 715-715r, 45 Stat. 1222), as amended, by transfer of approximately 2,900 acres of land donated to the Federal Government by the Great Swamp Committee of the North American Wildlife Foundation.

REFUGE PURPOSES

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

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” (Migratory Bird Conservation Act of 1929; 16 U.S.C. 715d)

“...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 ...” (Refuge Recreation Act; 16 U.S.C. 460k-1) *“the Secretary...may accept and use...real...property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors...”* (Refuge Recreation Act; 16 U.S.C. 460k-2, as amended)

“...for 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 ...” (Emergency Wetlands Resources Act of 1986; 16 U.S.C. 3901(b)); and,

“... to conserve (A) fish or wildlife which are listed as endangered species or threatened species or (B) plants ...” (Endangered Species Act of 1973; 16 U.S.C. 1534).

“...to secure for the American people of present and future generations the benefits of an enduring resource of wilderness... wilderness areas ... shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness: ...”
(Wilderness Act of 1964; Public Law 88-577; 16 U.S.C. 1131-1136)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The Mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Improvement Act; 16 U.S.C. 668dd(a)(2)).

Description of Use:

(a) What is the use? Is the use a priority public use? The use is alternate forms of transportation to provide access to and facilitate priority uses on the Great Swamp NWR. Alternate forms of transportation is defined as horseback riding and bicycling. Alternate forms of travel is not a priority public use of Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). They facilitate priority public uses such as, wildlife observation and photography, environmental education and interpretation.

(b) Where would the use be conducted? Horseback riding and bicycling are permitted only on the 2.5 mile section of Pleasant Plains Road that is owned and controlled by the refuge. This road is 1.7 miles of gravel with a .8 section of pavement, open to refuge visitors for wildlife observation and photography and has a regulated speed limit of 15 to 25 miles per hour. Other connecting roads in the area are not controlled by the refuge or covered by this Compatibility Determination. These uses are restricted to the road surface and are not allowed on any adjacent sensitive areas or management roads.

(c) When would the use be conducted? Alternate forms of transportation would be allowed throughout the entire year, during the refuge’s normal open hours. The refuge is open daily sunrise to sunset. Exceptions would occur during the refuge deer firearm hunt and under the auspices of Special Use Permits.

(d) How would the use be conducted? Alternate forms of transportation are currently allowed on the refuge to facilitate priority public uses. Visitors using alternate modes of transportation typically would enter the refuge at public entry points and use refuge parking areas as needed.

To accommodate other users and promote a wildlife watching experience, pedestrian group size larger than 10 should coordinate with the refuge office and/or visitor services staff. Individuals biking will be allowed to enter the refuge portion of Pleasant Plains Road from the south end of the road and the north

end of the road. Bicycling on Pleasant Plains Road during daylight hours is restricted to the road surface only.

Horseback travel to facilitate wildlife observation involves observing natural landscape features from horseback. Horseback travel for such purposes is done at a walking gait. Riding commonly occurs in groups with an average group size of 2-4 riders but a single rider is not unusual. Travel is limited to the 2.5 mile section of Pleasant Plains Road with mostly gravel surfaces and where the road width can accommodate the safe passage of other users. Pleasant Plains Road is open to refuge visitors and considered as a wildlife tour route where other legitimate alternate modes of transportation i.e. auto, motorcycle, bicycle, foot, etc. are permitted without discrimination. Overall traffic volumes are low on this road. The road also has sufficient viewing distance from horseback riders to timely detect the approach of other users and maneuver to accommodate them. Riders will remain with horses at all times on the refuge. To promote safety with other users and encourage a nature viewing experience, group size would be limited to a maximum of 5 riders. Riders would enter the refuge at the public entry points at the north or south end of Pleasant Plains Road. Riders would share roads and travel single file to accommodate other users. Horseback travel on the refuge is currently minimal. A refuge officer will routinely monitor rider numbers seen during patrols, user interactions, and potential safety concerns. This use will be conducted in accordance with the stipulations necessary to ensure compatibility.

(e) Why is the use being proposed? Alternate modes of travel are a fundamental method for the public to access the refuge. Pleasant Plains Road provides the public with an opportunity to view the diversity of habitats and wildlife that characterize the refuge and to access the refuge headquarters, visitor center, and public access areas without significant environmental consequences at current levels of use.

Bicycling on Pleasant Plains Road is permitted because this section of roads is open to the public and considered as a wildlife tour route. Overall traffic volumes are low on this section of road.

Horseback travel on the refuge would provide an increased opportunity for the public to participate in priority public uses. This has been a traditional use on Pleasant Plains Road. Current levels of use are minimal and with the prescriptions necessary to ensure compatibility, the sharing of designated roads with other users and alternate modes of transportation, is unlikely to be a safety risk. At current levels of use and riding restricted to Pleasant Plains Road which has a pavement, and a hard modified surface, horseback travel would cause minimal surface disturbance

Availability of Resources:

Refuge roads and trails are routinely patrolled by refuge officers, regularly traveled by refuge personnel and volunteers, and several refuge employees also live in government quarters on the refuge. This presence will help monitor, administer and enforce these activities and restrictions on alternate modes of transportation.

Since these uses are occurring on Pleasant Plains Road, which is open to the public for access to the refuge headquarters, visitor center, and public use parking lots, there will be no additional costs associated with allowing these uses.

Based on existing refuge expenditures for managing visitor use, funding is adequate to ensure compatibility at the current level of use and to administer and manage the subject use.

Anticipated Impacts of Use:

Natural resource management is a key purpose and responsibility for all refuges. Refuge staff must determine how to accommodate visitor use while protecting sensitive natural resources. Regional staff can promote alternate transportation as a means of reducing negative impacts on resources. They can also promote both the visitor experience and interpretation benefits that come from using alternative transportation. (Mast, 2012 RATE Report).

Benefits of alternate forms of transportation such as horseback riding and bicycling can include but are not limited to; reduce the Service's overall carbon footprint, reduce the use of carbon-based fuels, enhance accessibility, and reduce the volume of air pollutants emanated from vehicles.

Spatial and temporal restrictions will minimize recreational impacts on wildlife in wild lands (Knight & Cole 1991). Minimizing negative impacts is most effective when alternate travel is confined to trail corridors and select trails as well as time restrictions. More specifically, because Pleasant Plains Road and refuge parking areas are gravel or paved they have limited habitat value and the potential impacts to wildlife are minimized.

Horseback and bicycle forms of alternate transportation will have minimal negative impacts on the hydrology, plants, or soils due to the restricted nature of this use. Pleasant Plains Road is the only area that this use will be permitted. The number of horseback riders over the last 5 years has been minimal if any (verbal communication with Refuge Manager Koch). The road is devoid of vegetation and part has a hard packed graded surface while part is pavement. Based on current levels of use it is anticipated that no significant increase in invasive plant species introduced by manure will occur as a result of this use. This section of road is also routinely traveled by refuge staff that monitors and responds to invasive plants. Further, refuge staff in concert with volunteers has formed an "Early Detection-Rapid Response Team" to identify and control invasive(s). Impacts on wildlife will be minimal since the road is not close enough to wildlife concentration areas. Short-term disturbance may occur to wildlife directly adjacent to the road. It is anticipated that horse and bike use of these routes will not cause any direct or indirect impacts to threatened or endangered species. The road is not habitat for bog turtles nor is it adjacent to known bog turtle areas. The timing of the uses will be such that disturbance to bats, including Indiana bats, will be unlikely. Routes for both are on existing Pleasant Plains Road. No new habitat disturbance will occur outside of this route. User conflicts are unlikely to occur due to the low number of users in the area; however the use should be monitored to adjust management strategies to any significant increase in use. Continuing alternate forms of transportation on these routes is not likely to cause any significant impacts to plants or plant communities.

The refuge staff will closely monitor pedestrian and alternate modes of travel on the refuge for user conflicts, resource impacts, dramatic increase in visitation, and safety issues. It will be incumbent on the refuge management to adjust management strategies to ensure proper stewardship of refuge resources while providing quality and safe wildlife dependent experiences for its visitors.

Public Review and Comment:

This compatibility determination is being released concurrent with the draft Comprehensive Conservation Plan/Environmental Assessment for a 45-day review and comment period.

Determination (check one below):

Use is not compatible

Use is Compatible

Stipulations Necessary to Ensure Compatibility:

- Restricted to 2.5 mile section of Pleasant Plains Road and only during daylight hours.
- Horseback riders limited to 5 riders maximum per group
- Horseback riders travel in single file, horses not tied to trees and must be accompanied by riders at all times.
- NO access to refuge during firearm deer hunt.

Justification:

By allowing these uses in the manner described, physical impacts to vegetation, soils, hydrology, wetland communities, and ecological integrity of Great Swamp NWR will be minimized. Hydrologic and soil impacts were generally inherited with refuge lands and are being remediated through routine maintenance operations. These uses will not affect the refuge's ability to restore impacted lands nor will they materially increase sedimentation, erosion or hydrologic impacts on refuge lands.

These uses will be allowed adjacent to the most common habitat type, and disturbance will be limited and manageable. For this reason disturbance effects will not prevent the refuge from fulfilling the purposes of the Fish and Wildlife Act (1956) or the mission of the Refuge System for conserving, managing, restoring, and protecting wildlife resources. Through these measures the refuge still fulfills its obligations to ensure the biological integrity of the refuge's wildlife, plant and habitat resources.

Two Federal-listed species occur on the refuge, the endangered Indiana bat and the threatened bog turtle. These uses will not have an effect on threatened or endangered species. Neither Pleasant Plains Road nor adjacent habitat is habitat for bog turtles there are also no known bog turtles present in this area. There will be no impacts to the bog turtle with these uses. Indiana bats are known to forage and roost throughout the Wilderness and Management Areas during the summer maternity period (Kitchell 2008). Bats arrive in April and remain on the refuge into October, after which they migrate to winter hibernacula (USFWS 2007). Alternate forms of transportation will not have an impact on the Indiana Bat as it nocturnal and will be roosted during the day. The refuge is open sunrise to sunset when the bats are not active therefore these uses will not affect their foraging activities.

These uses will not be allowed in the Wilderness area, so the uses will not materially interfere with or detract from the Wilderness purpose.

For the reasons discussed above, these uses will not affect the refuge's ability to conserve wetlands or protect, manage, and restore the wildlife and plant resources, as mandated through the Emergency Wetlands Resources Act (1986) and the Fish and Wildlife Act (1956), or the mission of the Refuge System. Based on this information, we have determined that environmental education and interpretation and wildlife observation and photography will not materially interfere with or detract from the mission of the Refuge System or the purposes for which the refuge was established. This use has been determined to be compatible provided the stipulations necessary to ensure compatibility are implemented. Under such conditions, the use is not expected to materially interfere with or detract from the mission of the Refuge System nor diminish the purpose for which the refuge was established, will not pose significant adverse effects on refuge resources, will not interfere with public use of the refuge, nor cause an undue administrative burden.

SIGNATURE:

Refuge Manager: _____
(Signature) (Date)

CONCURRENCE:

Regional Chief: _____
(Signature) (Date)

MANDATORY 15-YEAR REEVALUATION DATE: _____

Literature Cited:

Beal, C.M., and P. Monaghan. 2004. Human Disturbance: people as predation-free predators? *Journal of Applied Ecology* 41:335-343

Gabrielson , G.W. and E.N. Smith. 1995. Physiological responses of wildlife to disturbance. Pages 95-107 in R. L. Knight and K. J. Gutzwiller, ed. *Wildlife and Recreationists: coexistence through management and research*. Island Press, Washington, D.C. 372pp.

Keller, V. 1991. Effects of human disturbance on eider ducklings *Somateria mollissima* in an estuarine habitat in Scotland. *Biological Conservation* 58:213-228.

Kitchell, M. 2008. Roost Selection and landscape movements of females Indiana bats at the Great Swamp National Wildlife Refuge, New Jersey. Thesis. William Paterson University, Wayne, NJ.

USFWS, RATE Report Region 5 May 2012, Prepared by the US DOT John A. Volpe National Transportation Systems center, Anna Biton and Haley Peckett

USFWS. 2007. Indiana bat (*Myotis sodal*) draft recovery plan: First Revision. Department of the Interior, USFWS, Great Lakes-Big River Region – Region 3 Fort Snelling, MN

Yalden, P.E., and D. Yalden. 1990. Recreational disturbance of breeding golden plovers (*Pluvialis apricarius*). Biological Conservation 51:243-262.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Swamp National Wildlife Refuge

Use: Snowshoeing and Cross Country Skiing

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate

Appropriate

Refuge Manager: _____

Date: _____

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____

Date: _____

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

FWS Form 3-2319
02/06

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Swamp National Wildlife Refuge

Use: Snowshoeing and Cross-country Skiing

NARRATIVE:

The proposed uses are snowshoeing and cross-country skiing. Although these uses are not priority public uses, they do support wildlife observation, which is a priority public use. These uses may provide opportunities for visitors to observe and learn about wildlife, habitats, and refuge lands firsthand and at their own pace in an unstructured environment. These uses may also enhance the public's appreciation for wildlife conservation and land protection. It is anticipated that participation in these uses will produce a more informed public, with an enhanced stewardship ethic and enhanced support and advocacy for the U.S. Fish and Wildlife Service (Service) and natural resources as a whole.

These uses are low impact and low cost. The uses would be limited to those times when there is enough snow on the ground. There have been no documented complaints or conflicts between users of multiple activities.

These uses will not have an effect on threatened or endangered species. The bog turtle is in hibernation and not active during the winter months. It would be unlikely for a visitor to discover a hibernation turtle under snow and ground water-washed root systems of woody plants. The endangered Indiana bat is in hibernation and not present on the refuge during the winter months therefore these uses will not affect any of their activities.

These uses are consistent with the goals and objectives in the comprehensive conservation plan, particularly goal four, which is to 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. The uses will provide wholesome, safe outdoor recreation in a scenic setting. The hope is that those who come strictly for recreational enjoyment will be enticed to participate in the more educational and wildlife dependent facets of public use programs on the refuge. In addition, these uses promote Let's Go Outside, Connecting People with Nature, and other health-related initiatives that the Service supports.

COMPATIBILITY DETERMINATION

Use:

Snowshoeing and Cross-country skiing

REFUGE NAME

Great Swamp National Wildlife Refuge

DATE ESTABLISHED

1960

ESTABLISHING AND ACQUISITION AUTHORITY

Great Swamp National Wildlife Refuge (NWR, refuge) was established primarily under the authorities of the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711, 40 Stat. 755) and the Migratory Bird Conservation Act of 1929 (16 U.S.C. 715-715r, 45 Stat. 1222), as amended, by transfer of approximately 2,900 acres of land donated to the Federal Government by the Great Swamp Committee of the North American Wildlife Foundation.

REFUGE PURPOSES

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

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” (Migratory Bird Conservation Act of 1929; 16 U.S.C. 715d)

“...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 ...” (Refuge Recreation Act; 16 U.S.C. 460k-1) *“the Secretary...may accept and use...real...property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors...”* (Refuge Recreation Act; 16 U.S.C. 460k-2, as amended)

“...for 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 ...” (Emergency Wetlands Resources Act of 1986; 16 U.S.C. 3901(b)); and,

“... to conserve (A) fish or wildlife which are listed as endangered species or threatened species or (B) plants ...” (Endangered Species Act of 1973; 16 U.S.C. 1534)

“...to secure for the American people of present and future generations the benefits of an enduring resource of wilderness... wilderness areas ... shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness: ... ”
(Wilderness Act of 1964; Public Law 88-577; 16 U.S.C. 1131-1136)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The Mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Improvement Act; 16 U.S.C. 668dd(a)(2)).

Description of Use:

(a) What is the use? Is the use a priority public use? The uses are snowshoeing and cross country skiing in the Wilderness Area. Just as with other uses of the Wilderness Area, these uses will be allowed on and off designated trails. While these uses are not priority public uses of the Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57), they facilitate visitor participation in priority public uses.

(b) Where would the use be conducted ? Throughout the 3,660-acre Wilderness Area hiking, cross country skiing and snowshoeing are permitted. There are designated trails in the wilderness area covering a total of 8.5 miles.

Wilderness area Trails

Ivory	0.8 miles
Yellow	0.9 miles
Blue	2.4 miles
Red	0.5 miles
Orange	1.6 miles
Silver	0.4 miles
Green	0.7 miles
Beige	0.5 miles
White	0.7 miles

(c) When would the use be conducted? These uses occur in the winter when there is sufficient snow to allow the activities and when the refuge is open to the public. Most cross-country skiing and snowshoeing occur December through February. Currently the refuge is open daily from one half-hour before sunrise until one half-hour after sunset.

(d) How would the use be conducted? Visitors on cross-country skis and snowshoes depart from refuge roads or parking areas and are authorized to use the Wilderness Area. Parking lots and kiosks have been constructed at the trailheads of refuge trails to help orient visitors.

(e) Why is the use being proposed? While cross-country skiing and snowshoeing are not priority public uses, they provide opportunities for visitors to observe and learn about the Refuge System, Great Swamp NWR, and wildlife and habitats firsthand. Often visitors skiing and snowshoeing on the refuge engage in priority public uses such as wildlife observation and photography. Although much of the bird life is gone for the season and many mammal species are dormant or active only at night, this activity does help provide opportunities for wildlife observation. Winter species such as chickadees, nuthatches, and tufted titmouse are commonly observed. Mammal tracks are used to interpret the area's wildlife populations during the winter months. This exposure may lead to a better understanding of, and interest in, natural ecosystems, the importance of national wildlife refuges, and the role of the Service in protecting and restoring natural resources.

Availability of Resources:

Refuge roads and trails are routinely patrolled by refuge officers, regularly traveled by refuge personnel and volunteers, and several refuge employees also live in government quarters on the refuge. This presence will help monitor, administer and enforce these activities and restrictions on alternate modes of transportation.

With the administration of pedestrian /alternate travel on the refuge is estimated below:

Providing information to the public and administration needs

Resource impacts/monitoring, maintaining and updating of interp. Signs, and maint. of boundary signs.

Maintenance needs of Wilderness parking lots and trails.

Based on existing refuge expenditures for managing visitor use, funding is adequate to ensure compatibility at the current level of use and to administer and manage the subject use.

Anticipated Impacts of Use:

In general, negative effects on habitat and wildlife associated with these activities are minimal. Most wildlife species are less active during winter months, sensitive migratory birds have largely left the refuge, and it is not breeding season for any of the wildlife that may be present. The refuge does not groom or maintain trails in the winter. Cross-country skiing and snowshoeing are limited to winter and require sufficient snow cover to allow access. Surface water and soil may be frozen for at least a portion of this time, most vegetation is dormant, and sensitive habitat will largely be protected by a surface layer of snow. In addition, skis and snowshoes are designed to distribute weight, decreasing potential for eroding soils near waterways. Skiing and snowshoeing are limited to established roads and trails, and no recreational snowmobiles are allowed. Following are more specific descriptions of potential impacts associated with cross-country skiing and snowshoeing.

Effects on Hydrology and Water Quality: Visitor use has minimal potential to contaminate the Passaic River and its tributaries through soil sedimentation into streams caused by skiing and snowshoeing. There may also be runoff of petroleum products from parking lots.

The refuge minimizes adverse effects on water resources in a variety of ways. Refuge staff routinely monitors roads and trails for damage and remediates problem areas as needed. The refuge also conducts public outreach efforts to notify visitors of proper precautions, including carrying out all trash. This helps minimize risks associated with visitor use on the refuge. Visitors are also encouraged to limit group size to less than 10 people, and groups of more than 10 are asked to check in at the refuge office. Because of these efforts, combined with the seasonal limitations, trail restrictions, and stipulations listed in this document, impacts to water resources are expected to be minimal.

Effects on Vegetation: Short-term effects consist of the deterioration of plant material, whereas long-term effects of trampling include direct and indirect effects on vegetation and soils like diminishing soil porosity, aeration, and nutrient availability through soil compaction (Kuss 1986, Roovers et al. 2004). Compaction of soils thus limits the ability of plants, particularly rare and sensitive species, to re-vegetate affected areas (Hammit and Cole 1998). Kuss (1986) found plant species adapted to wet or moist habitats are the most sensitive and increased moisture content reduces the ability of the soil to support recreational traffic.

Overall effects on vegetation are expected to be minimal. As mentioned previously, skiing and snowshoeing are limited to winter and require sufficient snow cover to allow access. Vegetation is largely dormant during the winter and will largely be protected by a surface layer of snow. In addition, skis and snowshoes are designed to distribute weight, decreasing potential for compacting or eroding soils and trampling vegetation. The Wilderness Area and trails do not have any known occurrences of rare plant species on their surface that would be impacted by these uses.

Effects on Soils: Soils can be compacted and eroded as a result of continued use of roads and trails. Overall effects on soils are expected to be minimal. Skiing and snowshoeing are limited to winter and require sufficient snow cover to allow access. The soil surface will likely be frozen for some of the season, making it much less vulnerable to compaction or erosion. When these activities are occurring, soils also will largely be protected by a surface layer of snow. In addition, skis and snow shoes are designed to distribute weight, decreasing potential for compacting or eroding soils. Over the long-term, the risk of erosion and sedimentation problems that might affect soils in these habitats would increase with increased visitor use and trail use. However, given the time of year, locations, and methods used, increased levels of skiing and snowshoeing are not expected to significantly affect soils on the refuge.

Effects on Wildlife: Short-term and long-term adverse impacts would be expected for wildlife populations in relation to increasing trail miles and visitor use. Disturbances will vary by wildlife species involved and the type, level, frequency, duration and the time of year activities occur. Beale and Monaghan (2004) found that adverse effects to wildlife increase as number of users increase. The study found that an animal's response to one visitor walking down a trail is entirely different than its response to a group of users walking down a trail.

During winter months when the ground is frozen, erosive potential of soils are reduced and impacts of cross-country skiing snowshoeing on erosion and sedimentation of aquatic habitats would be minimal.

The use of trails in the winter for cross-country skiing and snowshoeing have similar wildlife disturbance effects as those which occur through pedestrian travel on these trails during the other seasons. One of the primary differences is that many migratory birds are not present and most resident species are not breeding or raising young during the time of year when cross-country skiing and snowshoeing occur. Additionally, many mammal species are less active during winter months. The most commonly-observed wildlife in the winter is chickadees, nuthatches, and ravens. Winter conditions cause increased stress through extreme weather conditions and food availability (Hammit and Cole 1998). Both bird and mammal species which are present and active this time of year can be even more negatively affected from the same level of disturbance because of the added environmental stressors of severe weather and food shortages.

We will take all necessary measures to mitigate any negative effects on wildlife associated with skiing and snowshoeing. We will evaluate the Wilderness Area periodically to assess potential negative effects. If evidence of unacceptable adverse effects is observed, we will curtail or discontinue activities as needed. We will post and enforce refuge regulations, and establish, post, and enforce closed areas as needed. However, negative effects on wildlife are expected to be minimal. As discussed previously, cross-country skiing and snowshoeing are limited to winter months and require sufficient snow levels to allow access.

The refuge also recognizes that large group sizes may amplify negative effects to wildlife. Therefore, groups larger than 10 are required to notify the refuge prior to visiting to determine if a Special Use Permit will be needed. Requiring large groups to contact the refuge prior to visiting will enable the refuge to understand which trails are preferred by large groups, and to monitor any potential excessive wildlife disturbance created by large groups. Having the ability to monitor these kinds of disturbances will enable the refuge to mitigate impacts associated with large groups. Examples of mitigation may include directing large groups to less sensitive habitats during breeding seasons or assigning refuge staff to lead or meet with the group while on refuge lands. Limiting group size will also increase the quality of the experience and decrease the potential of conflicting with other users' experience.

Effects on Threatened and Endangered Species: There are two federally listed species known to occur on the refuge the Indiana bat and bog turtle. Indiana bats (*Myotis sodalis*), listed as endangered, is known to use the refuge's forested areas for summer foraging and roosting. It is possible that they have a summer maternity colony on refuge lands as well, but this has not been documented. Disturbance to the Indiana bat is unlikely as the bat is not known to be present on the refuge during the winter month for hibernation. The refuge also provides habitat for the bog turtle. A small population occurs in a few acres of emergent wetland habitat that is closed to the public. Additionally, several wetlands associated with seeps that historically have supported bog turtles are scattered throughout the refuge; in the recent past, single occurrences of the species have been documented in two of these areas. In general, these activities should not affect the Bog Turtle as these activities take place during the winter when the Bog Turtle have entered their hibernacula (e.g., ground water-washed root systems of woody plants).

The refuge staff will closely monitor pedestrian and alternate modes of travel on the refuge for user conflicts, resource impacts, dramatic increase in visitation, and safety issues. It will be incumbent on the refuge management to adjust management strategies to ensure proper stewardship of refuge resources while providing quality and safe wildlife dependent experiences for its visitors.

Public Review and Comment:

This compatibility determination is being released concurrent with the draft Comprehensive Conservation Plan/Environmental Assessment for a 45-day review and comment period.

Determination (check one below):

Use is not compatible

Use is Compatible

Stipulations Necessary to Ensure Compatibility:

These activities are allowed in the Wilderness Area.

Information about allowable uses and refuge regulations are available at Refuge Headquarters or the Visitor Center.

Minimum of 2 inches of snow.

Groups of 10 or larger must check in at Refuge Headquarters.

Justification:

By allowing these uses in the manner described, physical impacts to vegetation, soils, hydrology, wetland communities and ecological integrity of Great Swamp will be minimized. Through proper trail maintenance these impacts will be further reduced. Hydrologic and soil impacts were generally inherited with refuge lands and are being remediated through routine maintenance operations. These uses will not affect the refuge's ability to restore impacted lands nor will they materially increase sedimentation, erosion or hydrologic impacts on refuge lands.

By limiting the uses to the Wilderness Area and within the most common habitat type, disturbance will be limited and manageable. For this reason disturbance effects will not prevent the refuge from fulfilling the purposes of the Fish and Wildlife Act (1956) or the mission of the Refuge System for conserving, managing, restoring, and protecting wildlife resources. Through these measures the refuge still fulfills its obligations to ensure the biological integrity of the refuge's wildlife, plant, and habitat resources.

These uses will not have an effect on threatened or endangered species. No public use trails are open on lands which are occupied by threatened bog turtle. The bog turtle is in hibernation and not active during the winter months. It would be unlikely for a visitor to discover a hibernation turtle under snow and ground water-washed root systems of woody plants. The endangered Indiana bat is in hibernation and not present on the refuge during the winter mounts therefore these uses will not affect any of their activities.

For the reasons discussed above, these uses will not affect the refuge's ability to conserve wetlands or protect, manage, and restore the wildlife and plant resources, as mandated through the Emergency Wetlands Resources Act (1986) and the Fish and Wildlife Act (1956), or the mission of the Refuge

System. Based on this information, we have determined that environmental education and interpretation and wildlife observation and photography will not materially interfere with or detract from the mission of the Refuge System or the purposes for which the refuge was established. This use has been determined to be compatible provided the stipulations necessary to ensure compatibility are implemented. Under such conditions, the use is not expected to materially interfere with or detract from the mission of the Refuge System nor diminish the purpose for which the refuge was established, will not pose significant adverse effects on refuge resources, will not interfere with public use of the refuge, nor cause an undue administrative burden.

SIGNATURE:

Refuge Manager: _____
(Signature) (Date)

CONCURRENCE:

Regional Chief: _____
(Signature) (Date)

MANDATORY 15-YEAR REEVALUATION DATE: _____

Literature Cited:

Beale, C.M. and P. Monaghan. 2004. Human disturbance: people as predation-free predators? *Journal of Applied Ecology* 41:335-343.

Gabrielson, G.W. and E.N. Smith. 1995. Physiological responses of wildlife to disturbance. Pages 95-107 in R.L. Knight and K.J. Gutzwiller, ed. *Wildlife and Recreationists: coexistence through management and research*. Island Press, Washington, D. C. 372pp.

Hammit, W.E., and D.N. Cole. 1998. *Wildlife Recreation: Ecology and Management* (2nd edition). New York: John Wiley & Sons. 361p.

Keller, V. 1991. Effects of human disturbance on eider ducklings *Somateria mollissima* in an estuarine habitat in Scotland. *Biological Conservation* 58:213-228.

Kuss, F.R. 1986. A review of major factors influencing plant responses to recreation impacts. *Environmental Management* 10:638-650.

Roovers, P., K. Verheyen, M. Hermy, and H. Gulinck. 2004. Experimental trampling and vegetation recovery in some forest and heathland communities. *Applied Vegetation Science* 7:111-118.

USFWS, RATE Report, Region 5, May 2012, Prepared by the US DOT John A. Volpe National Transportation Systems center; Anna Biton and Haley Peckett

Yalden, P.E., and D. Yalden. 1990. Recreational disturbance of breeding golden plovers (*Pluvialis apricarius*). *Biological Conservation* 51:243-262.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Swamp National Wildlife Refuge

Use: Dog Walking on Pleasant Plains Rd. and Designated Parking Areas

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate

Appropriate

Refuge Manager: _____

Date: _____

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____

Date: _____

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

FWS Form 3-2319
02/06

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Swamp National Wildlife Refuge

Use: Dog Walking

NARRATIVE:

The proposed use is dog walking on designated trails and with dogs on a leash. This use is not a priority public use, however, it may provide opportunities for visitors to observe and learn about wildlife, habitats, and refuge lands firsthand and at their own pace in an unstructured environment. This use may also enhance the public's appreciation for wildlife conservation and land protection. It is anticipated that participation in this use will produce a more informed public, with an enhanced stewardship ethic and enhanced support and advocacy for the U.S. Fish and Wildlife Service and natural resources as a whole.

Dog walking is an existing use on Great Swamp National Wildlife Refuge's (NWR) public trails and has occurred without incident. Dog walking is a very popular activity which encourages public visitation, exposure to the refuge and the mission of the National Wildlife Refuge System. Dog walking is strictly enforced on the refuge, and regulations require dogs to be on a leash of 10 feet or less. Dog owners are also required to immediately pick up, and properly dispose of, dog waste. Dog walking is restricted to Pleasant Plains Road. These regulations minimize impact to wildlife and their habitats.

Great Swamp NWR is located in a highly suburban area. Pleasant Plains Road is used for a variety of activities and consists of a wide corridor. Most dog walkers are local residents who regularly visit the refuge and understand and comply with this regulation. Limiting the area for dog walking to Pleasant Plains Road and parking areas which are presently open to automobiles, motorcycles, bicycles, horseback riding, and walking would minimize potential disturbance to wildlife and other user groups. Impacts associated with dog walking given the setting and type of trails that are used, combined with the history of dog use on the lands, lead us to consider dog walking as an appropriate use of the refuge.

COMPATIBILITY DETERMINATION

USE

Dog walking on Pleasant Plains Road and in designated parking areas

REFUGE NAME

Great Swamp National Wildlife Refuge

DATE ESTABLISHED

1960

ESTABLISHING AND ACQUISITION AUTHORITY

Great Swamp National Wildlife Refuge (NWR, refuge) was established primarily under the authorities of the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711, 40 Stat. 755) and the Migratory Bird Conservation Act of 1929 (16 U.S.C. 715-715r, 45 Stat. 1222), as amended, by transfer of approximately 2,900 acres of land donated to the Federal Government by the Great Swamp Committee of the North American Wildlife Foundation.

REFUGE PURPOSES

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

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” (Migratory Bird Conservation Act of 1929; 16 U.S.C. 715d)

“...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 ...” (Refuge Recreation Act; 16 U.S.C. 460k-1) *“the Secretary...may accept and use...real...property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors...”*(Refuge Recreation Act; 16 U.S.C. 460k-2, as amended)

“...for 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 ...” (Emergency Wetlands Resources Act of 1986; 16 U.S.C. 3901(b)); and,

“... to conserve (A) fish or wildlife which are listed as endangered species or threatened species or (B) plants ...” (Endangered Species Act of 1973; 16 U.S.C. 1534).

“...to secure for the American people of present and future generations the benefits of an enduring resource of wilderness... wilderness areas ... shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness: ...” (Wilderness Act of 1964; Public Law 88-577; 16 U.S.C. 1131-1136)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The Mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Improvement Act; 16 U.S.C. 668dd(a)(2)).

DESCRIPTION OF PROPOSED USE

(a) What is the use? Is the use a priority public use?

The use is walking a properly licensed dog on a leash on Pleasant Plains Road or in designated parking areas during daylight hours. Dog walking is not a priority public use of the Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

(b) Where would the use be conducted? Dog walking would be permitted only in designated parking areas and on the approximately 2.5 mile section of Pleasant Plains Road which is owned and controlled by the refuge. This road is mostly gravel, open to refuge visitors for wildlife observation and photography, and has a regulated speed limit of between 15 to 25 miles per hour. Other roads through and around the refuge are not controlled by the refuge or covered by this Compatibility Determination. With a 10-foot leash, dogs would be physically restricted from accessing sensitive areas and disturbing birds or other wildlife species except those immediately adjacent to the road where fewer interactions are likely to occur due to the lower quality of habitat found immediately along roadsides.

(c) When would the use be conducted? Dog walking would be allowed throughout the year between sunrise and sunset when the refuge is open to the general public.

(d) How would the use be conducted? Dog walkers would be allowed to walk their dogs only when the dog is attached to a leash 10 feet or less in length that the dog walker is in direct

physical control of at all times. All dog walking would be restricted to Pleasant Plains Road and parking areas at all times. Dog owners would be required to pick up after their dogs using materials they supply.

(e) Why is this use being proposed? Since dogs are not permitted elsewhere on the refuge, refuge visitors will be able to walk their dogs and also have an opportunity to enjoy non-consumptive wildlife-oriented recreation, a stated purpose of this refuge. Some visitors travel a great distance so allowing a leashed dog in parking areas and Pleasant Plains Road allows visitors to extend their visit and gain a greater understanding and appreciation of the refuge.

Dog walking provides the refuge with an excellent opportunity to educate dog walkers about the refuge and the Refuge System. We currently allow dog walking on the refuge and have not had significant negative impacts from this use during the many years it has been permitted. The section of Pleasant Plains Road where this use is permitted is very popular for wildlife observation, is the safest road in the Great Swamp area for pedestrians, and is heavily used by visitors, staff, and volunteers. The Refuge Headquarters, visitor center, and three government-owned houses rented by staff are spread along its length. Therefore, a high degree of monitoring and observations supplement the refuge law enforcement officer's routine patrols. Non-law enforcement staff and volunteers are periodically briefed on "how to be a good witness" to improve their effectiveness reporting observed infractions. This serves as a deterrent to dog walkers considering unleashing their dog and to other types of infractions. Dog walkers have been historically good about keeping their pets on leashes and cleaning up after them. Regulatory signs and printed information are used to reinforce refuge rules.

AVAILABILITY OF RESOURCES

Except for maintaining and periodically updating regulatory signs and printed materials, minimal costs would be involved. Monitoring for compliance would continue but, would not require significantly more resources beyond those already provided to patrol the areas for compliance with current regulations. Permitting this use is within the resources available to administer our Visitor Services Program. There is no additional staff or material costs incurred to the refuge. Enforcing the leash regulation is within the regular duties of the refuge's Law Enforcement Officer. The financial and staff resources necessary to provide and administer this use at its current level are now available and we expect them to be available in the future. The annualized cost associated with the administration of dog walking on the refuge is estimated below:

Public information and program administration = \$1,000
 Law Enforcement = \$1,000
 Total = \$ 2,000

Based on existing refuge expenditures for managing visitor use, funding is adequate to manage the subject use.

ANTICIPATED IMPACTS OF THE USE

Impacts to Birds: The presence of dogs and pedestrians on the refuge, either on trails or off trails, is likely to cause temporary disturbance to birds. A study done in Colorado (Miller et al. 2001) found that robins, representing forest species, and western meadowlarks and vesper sparrows, representing grassland species, flushed when approached by dogs on and off leash. Dogs alone generally resulted in less disturbance than when pedestrians were present, either alone or holding a leashed dog. The authors surmised that because dogs resemble coyotes and foxes, which are not considered significant predators of songbirds (Leach and Frazier 1953, Andelt et al. 1987), they may not have been perceived as an important threat. Disturbance was generally greater off trails than on trails. Dogs alone are not likely to cause significant disturbance beyond that caused by foxes and coyotes. Any disturbance would be temporary and should not lead to loss of migratory birds or their habitats.

Impacts to Wetlands: It is unlikely that dogs will enter refuge wetlands due to trail location and refuge regulations. All dogs must be on leash and regulations state that visitors must remain on public trails.

Impacts to Other Fish and Wildlife Resources: There can be an increase in wildlife disturbance from dog walking simply due to normal dog behavior (i.e., jumping, barking, running off a leash). At some level, domestic dogs maintain instincts to hunt and/or chase. Given the appropriate stimulus, those instincts can be triggered in many different settings. Even if the chase instinct is not triggered, dog presence in and of itself has been shown to disrupt many wildlife species (Sime 1999). Sime presents some effects of disturbance, harassment, and displacement on wildlife attributable to domestic dogs that accompany recreationists. Sime states that authors of many wildlife disturbance studies concluded that dogs with people, dogs on-leash, or loose dogs provoked the most pronounced disturbance reactions from their study animals. Dogs extend the zone of human influence when off-leash. Many ungulate species demonstrated more pronounced reactions to unanticipated disturbances, as a dog off-leash would be. In addition, dogs can force movement by ungulates (avoidance or evasion during pursuit), which is in direct conflict with overwinter survival strategies which promote energy conservation. Sime continues to highlight that dogs are noted predators for various wildlife species in all seasons. Domestic dogs can potentially introduce diseases (distemper, parvovirus, and rabies) and transport parasites into wildlife habitats. While dog impacts to wildlife likely occur at the individual scale, the results may still have important implications for wildlife populations. For most wildlife species, if a “red flag” is raised by pedestrian-based recreational disturbance, there could also be problems associated with the presence of domestic dogs. Recent extensive research has shown that human walkers (without dogs) can induce anti-predator responses in birds including vigilance and early flight, which may lead to a cascade of related responses that negatively affect birds (Blumstein and Daniel 2005). In a study by Banks and Bryant (2007), results reveal that even dogs restrained on leads can disturb birds sufficiently to induce displacement. Responses to transient human disturbance are well known (Blumstein et al. 2005) and predicted to lead to population-level impacts on some birds species (Hill et al. 1997). One study found no net difference in bird diversity or abundance between areas with and without regular dog walking receiving the same treatment, suggesting that long-term impacts in that area may be small (Banks and Bryant 2007). The amplitude of this type of impact would be greater if

ground nesting birds were disturbed to the extent that they would stop returning to their nest, or if nests, eggs, or young were to be trampled by foot traffic, especially since handlers or trainer are more likely to be focusing on their dogs, not the ground. Off-lead dog walking can also disturb some species of breeding shorebirds from their nests (Lord et al. 2001). To minimize these potential impacts, dogs are required to be on a leash of 6 feet or less at all times, and in control of the owner. In addition, trails that accommodate dog walking do not traverse wetlands or areas that support shorebird nesting. Lastly, dog waste can create sanitation issues and an unsightly environment to other refuge visitors. Therefore, dog owners are required to immediately pick up after their pets and pack out waste.

Studies on impacts of recreational dog walking in woodlands demonstrated a 35 percent reduction in bird diversity and 41 percent reduction in abundance, both in areas where dog walking is common and where dogs are prohibited (Banks and Bryant 2007). Free-ranging and uncontrolled dogs can chase and flush ground-nesting or foraging birds and other wildlife, and occasionally prey on reptiles. Potential impacts of domestic dogs could be broadly classified as harassment, injury, or death of wildlife. Harassment is the disruption of normal maintenance activities, such as feeding, bedding, or grooming. It can take the form of disrupting, alarming, or even chasing. If dogs chase or pursue wildlife, injuries could be sustained directly or indirectly as a result of accidents that occur during the chase itself rather than direct contact with the dog. Impacts of domestic dogs can also include modification of wildlife behavior.

The presence of dogs may flush incubating birds from nests (Yalden and Yalden 1990), disrupt breeding displays (Baydack 1986), and disturb roosting activity in ducks (Keller 1991). Many of these authors indicated that people with dogs on a leash and loose dogs provoked the most pronounced disturbance reactions from their study animals. The greatest stress reaction results from unanticipated disturbance. Animals show greater flight response to humans moving unpredictably than to humans following a distinct path (Gabrielsen and Smith 1995). Despite thousands of years of domestication, dogs still maintain instincts to hunt and chase. The appropriate stimulus can trigger those instincts. Dogs that are unleashed or not under the control of their owners may disturb or threaten the lives of some wildlife. In effect, off-leash dogs increase the radius of human recreational influence or disturbance beyond what it would be in the absence of a dog.

The role of dogs in wildlife diseases is poorly understood. However, dogs host endo- and ectoparasites and can contract diseases from or transmit diseases to wild animals. In addition, dog waste is known to transmit diseases that may threaten the health of some wildlife and other domesticated animals. Domestic dogs potentially can introduce various diseases and transport parasites into wildlife habitats (Sime 1999). There would be no impacts to hydrology, plants, or soils due to the restricted nature of this use.

The use would be confined to Pleasant Plains Road and parking areas and no new construction or vegetation clearing is required. Because Pleasant Plains Road and parking areas are paved or gravel they have inherently limited habitat value to wildlife. Impacts on wildlife would be minimal since the road is distant from wildlife concentration areas and the dogs would be leashed. Short-term disturbance may occur to wildlife directly adjacent to the road. User conflicts are unlikely to occur since the areas authorized for dog walking are wide and can safely

accommodate multiple simultaneous users. Dog waste can create an unsightly and unsanitary environment for other refuge visitors. Although these negative impacts exist, they are kept to a minimum by restricting dog walking to designated areas of the refuge and strictly enforcing the leash and waste removal requirements. It is anticipated that leashed dog walking on Pleasant Plains Road and in parking areas would not cause any direct or indirect impacts to federally listed, threatened or endangered species, because the areas that dog walking is allowed does not overlap with areas that threatened and endangered species are known to occur.

PUBLIC REVIEW AND COMMENT

This compatibility determination is being released concurrent with the draft Comprehensive Conservation Plan/Environmental Assessment for a 45-day review and comment period.

DETERMINATION (CHECK ONE BELOW):

- Use is not compatible
- Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY

- Only leashed and properly licensed dogs would be allowed on the refuge. The leash would be no more than 10 feet long. Dog walkers would be required to maintain direct physical control of their animal while on the refuge, thereby reducing the potential and severity of impacts to wildlife.
- Dog walking is restricted to Pleasant Plains Road and parking areas only and is prohibited in all other areas of the refuge.
- Dog walkers must pick up after their dog(s) and remove pet waste.
- Refuge staff, especially Law Enforcement, and volunteers would monitor uses to ensure compatibility, refine user estimates, and evaluate compliance. Potential conflicts between user groups would also be evaluated.
- If a high number of reports of negative dog-wildlife interactions are reported, the refuge would reassess the use.
- If a high number of off-leash incidents are documented, we may consider eliminating dog walking from the refuge altogether.
- Restricting dog walking to Pleasant Plains Road and parking areas would minimize potential disturbance of wildlife.

JUSTIFICATION

Dog walking provides visitors with a much sought-after opportunity for non-consumptive wildlife-oriented recreation, a stated purpose of this refuge. We currently allow dog walking on the refuge and have not detected significant negative impacts from this use.

Although dogs can increase disturbance to wildlife, the refuge enforces a 10-foot maximum leash regulation to keep the dog within close proximity and under the direct control of its owner. Most dog walkers are local residents who regularly visit the refuge and understand and comply with this regulation. Limiting the area for dog walking to Pleasant Plains Road and parking areas which are presently open to automobiles, motorcycles, bicycles, horseback riding, jogging, and walking would minimize potential disturbance to wildlife and other user groups.

The stipulations (listed above) would negate or minimize any significant dog-related wildlife impacts as discussed in the potential impacts section. Dogs would be under the direct control of their owners at all times while on the refuge. We would require all dogs to be on a leash 10 feet or less which would prevent dogs from directly interacting with wildlife off the road or outside parking areas. Pleasant Plains Road and parking areas are paved or graveled and thus of low wildlife habitat value. With a 10-foot leash limit, dogs would not be able to access any sensitive areas or disturb birds or other species except along roadsides where few are present.

Allowing leashed dog walking on Pleasant Plains Road within the Great Swamp NWR will not materially interfere with or detract from the mission of the Refuge System or the migratory bird, wildlife conservation, or wetland protection purposes for which the refuge was established, because the activity will be allowed on a very small percentage of refuge lands that are open to a variety of uses and will not take place in close proximity to core wildlife habitat or wetland areas. Dog walking will also not materially interfere with or detract from the Wilderness purpose, because dog walking is not allowed in the Wilderness Area.

SIGNATURE:

Refuge Manager: _____
(Signature) (Date)

CONCURRENCE:

Regional Chief: _____
(Signature) (Date)

MANDATORY 10-YEAR REEVALUATION DATE: _____

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FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Swamp National Wildlife Refuge

Use: Commercial Filming, Photography, and Audio Recording

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate

Appropriate

Refuge Manager: _____

Date: _____

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____

Date: _____

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

FWS Form 3-2319
02/06

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Swamp National Wildlife Refuge

Use: Commercial Photography, Filming, or Audio Recording

NARRATIVE:

The proposed use includes the production of educational films and conducting photography filming and audio recording on Great Swamp National Wildlife Refuge. The emphasis is placed on wildlife and scenic photography. Neither film production nor conducting photography workshops are priority public uses; however, they both support and enhance the priority public uses of environmental education, interpretation, and wildlife photography.

The production of, and involvement with photography, filming, and audio recording will provide participants with an opportunity to learn about wildlife, habitats, and natural resources, while providing similar experiences to the general populous through recorded images and sounds. This allows the refuge to educate the public with a low impact secondary activity.

By allowing these uses, the visiting public will have a better understanding and appreciation for wildlife, habitats, the cultural history of the refuge, and of the importance of the National Wildlife Refuge System.

These uses are low impact, low cost, and highly controllable. Relatively small areas of the refuge are impacted by these activities. The educational value of these filming productions is very high. Many are marketed through public broadcasting stations reaching a broad spectrum and large number of potential customers.

COMPATIBILITY DETERMINATION

USE

Commercial Photography, Filming, or Audio Recording

REFUGE NAME

Great Swamp National Wildlife Refuge

DATE ESTABLISHED

1960

ESTABLISHING AND ACQUISITION AUTHORITY

Great Swamp National Wildlife Refuge (NWR, refuge) was established primarily under the authorities of the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711, 40 Stat. 755) and the Migratory Bird Conservation Act of 1929 (16 U.S.C. 715-715r, 45 Stat. 1222), as amended, by transfer of approximately 2,900 acres of land donated to the Federal Government by the Great Swamp Committee of the North American Wildlife Foundation.

REFUGE PURPOSES

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

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” (Migratory Bird Conservation Act of 1929; 16 U.S.C. 715d)

“...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 ...” (Refuge Recreation Act; 16 U.S.C. 460k-1) *“the Secretary...may accept and use...real...property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors...”*(Refuge Recreation Act; 16 U.S.C. 460k-2, as amended)

“...for 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 ...” (Emergency Wetlands Resources Act of 1986; 16 U.S.C. 3901(b)); and,

“... to conserve (A) fish or wildlife which are listed as endangered species or threatened species or (B) plants ...” (Endangered Species Act of 1973; 16 U.S.C. 1534).

“...to secure for the American people of present and future generations the benefits of an enduring resource of wilderness... wilderness areas ... shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness: ...” (Wilderness Act of 1964; Public Law 88-577; 16 U.S.C. 1131-1136)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Improvement Act; 16 U.S.C. 668dd(a)(2)).

DESCRIPTION OF PROPOSED USE

(a) What is the use? Is the use a priority public use? The use is commercial photography, filming (including videography), and audio recording (collectively called “recording” for the purposes of this compatibility determination). This use has occurred in the past (in recent years, 1-2 permits have been issued annually) and future requests are expected to remain steady or increase slightly. The use typically involves filming scenes for a movie, television show, or commercial, taking still photographs, or recording natural sounds for commercial purposes. The primary focus of the production may or may not be wildlife-related or educational in nature. In the latter instance, the refuge is used mainly as a natural background for the production. The final creation would be produced for sale as a commercial product. The refuge is a popular location for commercial recording because it is one of the largest and most pristine natural areas in close proximity to New York City, a major global media center. This use is regulated by Refuge Manual (RM) Part 8, Chapter 16 and the Code of Federal Regulations (CFR), Title 43, Subtitle A, Section 5.1. This is not a priority public use (National Wildlife Refuge System Improvement Act of 1997; Public Law 105-57); however, it may support and enhance the priority public use of wildlife photography. The recordings produced may also support the priority public uses of environmental education and interpretation.

Photography, video, filming, and audio recording of a noncommercial nature are addressed under a separate compatibility determination (CD; Wildlife Observation, Photography, Environmental Education, and Interpretation). Also, this CD does not apply to bona fide news media activities, which are regulated by 8 RM 16.

(b) Where would the use be conducted? Commercial recording could be done anywhere on the refuge with the exception of the Wilderness Area where “commercial enterprise(s)” are prohibited (Wilderness Act of 1964; Public Law 88-577; 16 U.S.C. 1131-1136; Great Swamp Wilderness Act of 1968; PL 90-532). Locations are selected based on the needs of the permittee, the availability of suitable locations, and sufficient refuge resources to manage the use.

(c) When would the use be conducted? Commercial recording could take place at any time of year. Timing will be based on the needs of the permittee, the availability of suitable production windows, and sufficient refuge resources to manage the use.

(d) How would the use be conducted? The use could be conducted on foot, from vehicles, from the air, or from the water (using small boats, canoes, or kayaks) using commercial recording equipment. The use would be regulated by Special Use Permit (SUP) and specific conditions would be developed to minimize or avoid adverse impacts to refuge resources. See “Stipulations Necessary to Ensure Compatibility” in this CD for further information. Intensive productions that produced more than minimal short-term impacts over a small area would not be permitted. Locations would be scouted immediately prior to recording to ensure conditions are suitable for activity (i.e. no sensitive wildlife in the immediate vicinity). Refuge staff would closely monitor operations to ensure compliance with all permit conditions and stipulations. The permittee would be responsible for repairing or restoring any damage created during production.

(e) Why is this use being proposed? Commercial recording provides an excellent opportunity to inform and educate the public about the refuge and the Refuge System. This opportunity is especially great given the potential for broadcast within and beyond the New York City media market, the nation’s largest. Commercial recordings may also support and enhance the priority public uses of wildlife photography, environmental education, and interpretation. When done in an appropriate and compatible manner, it is consistent with the intent and purposes of the refuge and supports the Comprehensive Conservation Plan’s (CCP) educational, interpretive, and recreational goals and objectives. This use was found compatible in a CD issued in 2004.

AVAILABILITY OF RESOURCES

The resources necessary to provide and administer this use are available within the current and anticipated refuge budgets. Staff time associated with administration of this use is related to answering questions from potential users, preparing SUPs, reevaluating the appropriateness and compatibility of this use every 10 years, and monitoring for compliance with the conditions and stipulations of the SUP and CD. The deputy refuge manager has primary responsibility for these duties which require approximately one work day per year. The refuge’s law enforcement officer spends approximately one work day per year monitoring to ensure compliance.

- GS-12 Deputy Refuge Manager: two days = \$694.00
- GL-09 Federal Wildlife Officer: two days = \$426.00
- Total = \$1,120.00

ANTICIPATED IMPACTS OF THE USE

The use under consideration has been occurring periodically on the refuge with little or no apparent impacts since the refuge was established. Since only small areas of the refuge would be impacted for short periods of time and since locations would be scouted in advance, any wildlife disturbance would be minimal during the brief production period. Commercial recording would not be permitted in areas or at times of particular sensitivity for wildlife such as near impoundments during migration or during nesting season. Any vegetation or soil disturbed incidental to recording would be immediately restored by the permittee. Disturbance associated with commercial recording is expected to be comparable to that created by wildlife photography, wildlife observation, or interpretive activities. Due to the infrequency of the use and stringent restrictions, disturbance is expected to remain minimal into the future.

The presence of people involved in commercial recording on refuge trails and roads can lead to displacement of animals from trails, although disturbance usually is a negligible influence on large mammal distributions and movements (Purdy et al. 1987; Boyle and Samson 1985). The effects on other forms of wildlife appear to be short-term with the exception of breeding bird communities. A study by Miller, Knight, and Miller (1998) indicates that species composition and nest predation was altered adjacent to trails in both forested and grassland habitats. It appears that species composition changes are due to the presence of humans and not the trail or roadway itself. On the other hand, nest predation does appear to be a function of the trail which allows access to mammalian nest predators (Miller, Knight, and Miller 1998). With respect to Great Swamp, we anticipate that similar impacts will occur here as well, particularly in high visitor use areas. Negative influences may be amplified during breeding seasons, especially to ground nesting birds and amphibians that may be crossing trails. Siemers and Schaub (2011) found that bat foraging efficiency decreased as traffic noise increased. Disturbance to forest birds at Great Swamp is complex and involves many factors. Important factors include the height and density of vegetation; topography; behavioral differences in species for ground nesting birds, low nesting birds, or foraging birds; and species response to human behaviors. Vegetation density and topography can obscure line of sight for birds. Some birds are more tolerant than others with respect to human proximity, while some birds are more apt to flee than others, (e.g. wood ducks).

Direct impacts on wildlife in the form of disturbance can be expected wherever humans have access to an area, and the degree may vary depending on the habitat type. In general, human presence disturbs most wildlife, which typically results in a temporary displacement without long-term effects on individuals or populations. Some species, such as wood thrush, will avoid areas frequented by people, such as developed trails and buildings. Other species, particularly highly social species such as eastern tufted titmouse, Carolina chickadee, or Carolina wren, seem

unaffected or even drawn to a human presence. When visitors approach too closely to nests, they may cause the adult bird to flush exposing the eggs to weather events or predators. The extent of disturbance along trails depends on a number of factors including visibility, determined by the density of vegetation through which the trail is laid. Various studies have shown that edge effect is variable and conservation design recommendations related to public use areas vary from 50 meters (164 feet) (Paton 1994) to about 90 meters (300 feet) (Robbins et al 1989; Brittingham and Temple 1983, Jones et al. 2000). Since the trails do not occur in the highest quality habitat, we anticipate that impacts will be minimal.

Bisson et al. (2009) found that white-eyed vireo quickly adapted to anthropogenic disturbance and showed no long-term increases in energy expenditure, activity rates, or parental behavior when repeatedly exposed to human-caused stressors. Brown et al. (2012) did not find a significant correlation between anthropogenic noise, human activity, and ungulate behavioral response. In fact, they found that ungulates were actually less responsive with increasing levels of vehicle traffic though responsiveness increased in the presence of pedestrians and motorcycles. Riffell, Gutzwiller, and Anderson (1996) found that repeated human intrusion of bird communities did not cause substantive cumulative declines in species richness or abundance.

Commercial recording could occur anywhere on the refuge except in the Wilderness Area. The use of trails and gravel roads during recording activities could lead to soil compaction, exposure of tree roots, and the modification of plant species 1 to 2 meters on either side of the trail which is a function of soil compaction, invasive species, and direct trampling of plants (Kuss 1986). The refuge will continue to use boardwalks, woodchips, erosion control, user education, and SUP conditions to protect plant species and habitats along trails and roadways. Providing trails concentrates use to areas that can be routinely maintained to minimize impacts to vegetation. The implementation of boardwalks and use of woodchips along trails has reduced impacts to vegetation and reduced soil erosion along trails. Some trampling of vegetation during commercial recording is unavoidable. Such damage, however, will be limited to transient and inconsequential impacts. People and vehicles can, however, be vectors for invasive plants when seeds or other propagules are moved from one area to another. Once established, invasives can out-compete native plants, thereby altering habitats and indirectly impacting wildlife. The threat of invasive plant establishment is an ongoing issue requiring continual monitoring and, when necessary, treatment. Staff will work with permittees to prevent the spread of invasives and eradicate new infestations following an Early Detection – Rapid Response strategy.

This use will have minimal impacts to water quality because commercial recording will be managed in a way that ensures minimal physical disruption to natural resources. Unless required by the production, commercial recording will be conducted in areas away from waterways and bodies of water. In instances where close proximity to water is required, stringent permit conditions and careful monitoring will limit impacts. Where trails are involved, the majority are set back from water. In instances where trails are adjacent to water, pollutants and sediments are

unlikely to be introduced to waterways given how lightly the trails will be used. Further, given the flat topography and rich vegetative cover characteristic of most of the refuge, sedimentation is unlikely to develop.

PUBLIC REVIEW AND COMMENT

This CD is being released concurrent with the draft Comprehensive Conservation Plan/Environmental Assessment for a 45-day review and comment period.

DETERMINATION (CHECK ONE BELOW):

Use is not compatible

Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY

- Commercial recording is administered through a SUP issued on a case-by-case basis. Stipulations are listed as “Special Conditions” in the SUP.
 - All activities must comply with 8 RM 16 and 43 CFR, Subtitle A, Section 5.1 and may require completion of a Commercial Audio-Visual Production Application and posting of a bond.
 - Prior to recording, the permittee will provide the refuge manager with a copy of their current liability insurance policy. The refuge must be named as an additional insured on the policy for the duration of the production.
 - Permittee must have the SUP in their possession at all times while on the refuge. A copy of the permit must also be prominently displayed on the dash of permittee’s vehicle(s) at all times while on the refuge. The permit must be presented to refuge officials upon request.
 - The permit is not transferable.
 - Access to the refuge in areas and at times not permitted to the general public may be granted depending upon the needs of the production, the availability of suitable location(s), and refuge operations and resources. All areas and times not specifically permitted are off-limits for recording.
 - Permittee may be required to provide public safety assets such as crowd or traffic control in coordination with the refuge manager.
 - Permittee’s vehicle(s) must remain on designated roads and be parked in designated refuge lots.
 - If a prop firearm is used, it must be clearly identified as a prop and kept cased when not in use.
 - Any damage created during production will be immediately repaired or restored to its original condition.

- All disturbances, including light and sound, should be minimized to the greatest extent possible.
- The refuge and Service will be explicitly recognized in the production's credits and not be identified as endorsing any products or services.
- The refuge reserves the right to postpone or cancel any activity that may interfere with public safety or refuge management activities.
- All other refuge rules and regulations remain in force.
- Permittee will provide the refuge manager with a report of pertinent information (such as species or habitats recorded and description of such recordings) within 30 days of the permit's expiration.

JUSTIFICATION

Compatible commercial recording in its various forms provides an excellent opportunity to inform and educate the public and promote the refuge and the Refuge System. This opportunity is especially great given the potential for broadcast within and beyond the New York City media market, the nation's largest. Since production activities would be greatly limited, any disturbances associated with recording would be minimal and readily controlled through the proper selection of locations, timing of production, and stringent SUP conditions and monitoring. While commercial recording is a secondary public use it may support and enhance the priority public uses of wildlife photography, environmental education, and interpretation. By allowing commercial recording, the public may gain a better understanding and appreciation for wildlife and the history of the refuge and the importance of the Refuge System. One of the secondary goals of the Refuge System is to provide opportunities for the public to develop an understanding and appreciation for wildlife wherever those opportunities are compatible. Furthermore, permitting appropriate and compatible commercial recording is consistent with the goals of the Refuge System, the intent and purposes of the refuge, and supports the CCP's educational, interpretive, and recreational goals and objectives.

Allowing the continuation of commercial photography, filming, or audio recording at Great Swamp NWR will not materially interfere with or detract from the fulfillment of the migratory bird, habitat protection, or wetland purposes of the refuge because the use is infrequent, small in scope, and carefully managed to limit impacts. The use will not materially interfere with or detract from the wilderness purpose of the refuge because commercial recording is not permitted in the Wilderness Area. The use will not materially interfere with or detract from the mission of the Refuge System because commercial recording is consistent with the goals of the Refuge System and will be carefully managed to avoid anything more than localized, transient impacts or disturbances.

SIGNATURE:

Refuge Manager: _____
(Signature) (Date)

CONCURRENCE:

Regional Chief: _____
(Signature) (Date)

MANDATORY 10-YEAR REEVALUATION DATE: _____

LITERATURE CITED

Bisson, I.A., Butler L.K., Hayden T.J., Romero L.M., and Wikelski M.C. No energetic cost of anthropogenic disturbance in a songbird. *Proceedings of the Royal Society B-Biological Sciences* 2009:276(1658).

Boyle S.A. and Samson F.B. Effects of nonconsumptive recreation on wildlife: A review. *Wildlife Society Bulletin* 1985:13(110).

Brown C.L., Hardy A.R., Barber J.R., Fristrup K.M., Crooks K.R., and Angeloni L.M. The Effect of Human Activities and Their Associated Noise on Ungulate Behavior. *Plos One* 2012:7(7):9.

Kuss, F. A review of major factors influencing plant responses to recreation impacts. *Environmental Management* 1986:10(5):637.

Miller S.G., Knight R.L., and Miller C.K. Influence of Recreational Trails on Breeding Bird Communities. *Ecological Applications* 1998:8(162).

Purdy K.G., Goff, G.R., Decker D.J., Pomerantz G.A., and Connelly N.A. A Guide to Managing Human Activity on a National Wildlife Refuge. New York Cooperative Fish and Wildlife Research Unit 1987.

Riffell S.K., Gutzwiller, K.L., and Anderson S.H. Does repeated human intrusion cause cumulative declines in avian richness and abundance? *Ecological Applications* 1996:6(2).

Siemers B.M. and Schaub A. Hunting at the highway: traffic noise reduces foraging efficiency in acoustic predators. *Proceedings of the Royal Society B-Biological Sciences* 2011:278(1712).

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Swamp National Wildlife Refuge

Use: Wildlife Research

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate

Appropriate

Refuge Manager: _____

Date: _____

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____

Date: _____

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

FWS Form 3-2319
02/06

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Swamp National Wildlife Refuge

Use: Wildlife Research

NARRATIVE:

Research is conducted by colleges; Federal, State, and local agencies; non-governmental organizations; and qualified members of the general public.

The purposes of research conducted on the refuge are to further the understanding of natural resources and to improve the management of such resources on the refuge or within the National Wildlife Refuge System (Refuge System). Wildlife research opportunities on the refuge can provide insights into such topics as landscape conservation, habitat fragmentation, climate change, and other emerging issues, as well as the more traditional types of wildlife research, including inventory and monitoring techniques, land management, and understanding ecological processes. Research that supports the overall Service mission, and evaluates the best methods for protecting natural resources throughout the Refuge System and other land management agencies will be a priority. Wildlife research has therefore been found appropriate because it is consistent with the goals and objectives of the Comprehensive Conservation Plan.

COMPATIBILITY DETERMINATION

USE

Wildlife Research

REFUGE NAME

Great Swamp National Wildlife Refuge

DATE ESTABLISHED

1960

ESTABLISHING AND ACQUISITION AUTHORITY

Great Swamp National Wildlife Refuge (NWR, refuge) was established primarily under the authorities of the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711, 40 Stat. 755) and the Migratory Bird Conservation Act of 1929 (16 U.S.C. 715-715r, 45 Stat. 1222), as amended, by transfer of approximately 2,900 acres of land donated to the Federal Government by the Great Swamp Committee of the North American Wildlife Foundation.

REFUGE PURPOSES

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

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” (Migratory Bird Conservation Act of 1929; 16 U.S.C. 715d)

“...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 ...” (Refuge Recreation Act; 16 U.S.C. 460k-1) *“the Secretary...may accept and use...real...property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors”*...(Refuge Recreation Act; 16 U.S.C. 460k-2, as amended)

“...for 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 ...” (Emergency Wetlands Resources Act of 1986; 16 U.S.C. 3901(b)); and,

“... to conserve (A) fish or wildlife which are listed as endangered species or threatened species ... or (B) plants ...” (Endangered Species Act of 1973; 16 U.S.C. 1534).

“...to secure for the American people of present and future generations the benefits of an enduring resource of wilderness... wilderness areas ... shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness: ...” (Wilderness Act of 1964; Public Law 88-577; 16 U.S.C. 1131-1136)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Improvement Act; 16 U.S.C. 668dd(a)(2)).

DESCRIPTION OF PROPOSED USE

(a) What is the use? Is the use a priority public use? The use is wildlife research conducted by non-U.S. Fish and Wildlife Service (Service) personnel. Research conducted by non-Service personnel is not a priority public use of the Refuge System under the National Wildlife Refuge system Administration Act of 1966 (16 U.S.C 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

(b) Where the use would be conducted? The location of the research will vary depending on the individual research project that is being conducted. The entire refuge may be made available for scientific refuge. An individual research project usually is limited to a particular habitat type, plant, or wildlife species. On occasion, research projects will encompass an assemblage of habitat types, plants, or wildlife, or may span more than one refuge or include lands outside the refuge. The research location will be limited to those areas of the refuge that are absolutely necessary to conduct the research project. The refuge may limit areas available to research as necessary to ensure the protection of trust resources or reduce conflict with other compatible refuge uses. Access to study locations will be identified by refuge staff.

(c) When would the use be conducted? The timing of the research will depend entirely on the approved design of individual research projects. Scientific research will be allowed to occur on the refuge throughout the year. An individual research project could be short term in design, requiring one or two visits over the course of a few days. Other research projects could be

multiple year studies that require daily visits to the study site. The timing of each individual research project will be limited to the minimum required to complete the project. If a research project occurs during the refuge hunting season, special precautions will be required and enforced to ensure the researchers safety and so that conflicts with a priority public use (hunting) will be minimized or eliminated.

(d) How would the use be conducted? The methods of the research will depend entirely on the individual research project that is conducted. The methods of each research project will be reviewed and scrutinized before it will be allowed to occur on the refuge. No research project will be allowed to occur if it does not have an approved scientific method, if it negatively impacts endangered species, migratory birds, other refuge trust resources, or it comprises public health and safety. A research proposal form will be distributed to parties interested in conducting research on the refuge.

(e) Why is this use being proposed? Research by non-Service personnel is conducted by colleges, universities, Federal, State, and local agencies, non-governmental organizations, and qualified members of the general public to further the understanding of the natural environment and to improve the management of the refuge's natural resources. Much of the information generated by the research is applicable to management on and near the refuge. In many cases research by non-Service personnel ensures the perception of un-biased and objective information gathering which can be important when using the research to develop management recommendations for politically sensitive issues. Additionally, universities and other Federal partners can access equipment and facilities unavailable to refuge staff for analysis of data or biological samples.

The Service will encourage and support research and management studies on refuge lands that will improve and strengthen natural resource management decisions. The refuge manager will encourage and seek research relative to approved refuge objectives that clearly improves land management and promotes adaptive management. Priority research addresses information that will better manage the nation's biological resources and is generally considered important to: agencies of the Department of Interior; the Service; the Refuge System; and State fish and Game agencies, and that addresses important management issues or demonstrates techniques for management of species and/or habitats.

The refuge also will consider research for other purposes which may not be directly relate to refuge-specific objectives, but contribute to the broader enhancement, protection, use, preservation, and management of native populations of fish, wildlife and plants, and their natural diversity within the region of flyway.

The refuge will maintain a list of research needs that will be provided to prospective researchers or organizations upon request. Refuge support of research directly related to refuge objectives

may take the form of funding, in-kind services such as housing or use of other facilities, direct staff assistance with the project in the form of data collection, provision of historical records, conducting management treatments, or other assistance as appropriate.

AVAILABILITY OF RESOURCES

The bulk of the cost for research is incurrence in staff time to review research proposals, coordinate with the researchers and write special use permits (SUP). In other cases, a research project may take an accumulation of weeks, as the refuge biologist must coordinate with students and advisors and accompany researchers on site visits. Because research conducted on the refuge is not constant, there may be fiscal years when little if any time is spent on managing outside research projects by refuge staff. Support includes review of the proposal by the refuge manager, deputy refuge manager and senior staff, consultation and coordination with principal researcher and field staff, issuance of SUP, and review of progress reports and other daily operational communications.

Annual costs associated with the administration of permitting research by non-service personnel are estimated below:

- Review of research proposals, administration work, and consultation with refuge staff
 - GS 13 Refuge Manager: 2 days = \$923
 - GS 12 Deputy Refuge Manager: 3 days = \$1,041
- Review of research proposals, administration work, coordination with principal researcher and field crew, and project monitoring and review
 - GS 12 Visitor Services Manager: 2 days = \$617
 - GS 12 Contaminant Biologist: 2 days = \$617
 - GS 11 Wildlife Biologist: 10 days = \$2,573
 - GS 4 Administrative Assistant: 1 day = \$121
- Maintenance of housing facilities and coordination with field crew
 - GS 12 Deputy Refuge Manager: 3 days = \$1,041
 - GS 7 Maintenance Worker: 3 days = \$505

After review of the refuge budget, there are sufficient staff and funds to sustain this activity.

ANTICIPATED IMPACTS OF THE USE

The Service encourages approved research to further the understanding of natural resources. Research by other than Service personnel adds greatly to the information base for refuge managers to make proper decisions. Disturbance to wildlife and vegetation by researchers could occur through observation, mist-netting, banding, and accessing the study area by foot or vehicle. Mist-netting or other wildlife capture techniques, for example, can cause direct mortality through the capture method or in trap predation, and indirectly through capture injury or stress caused to

the organism. Plant collection also can cause direct mortality of the target plant and can cause indirect mortality through the collection process.

Disturbance to wildlife and vegetation by researchers could occur through observation, a variety of wildlife capture techniques, banding, collecting blood samples, flushing wildlife, and vegetation trampling from accessing the study area by foot or vehicle. It is possible that direct or indirect mortality could result as a by-product of research activities. Mist-netting or other wildlife capture techniques, for example, can cause mortality directly through the capture method or in-trap predation, and indirectly through capture injury or stress caused to the organism. Multiple, concurrent research projects could exacerbate impacts. Additional impacts could result from abandoned research apparatus left in the field. Overall, however, allowing well-designed and properly reviewed research is likely to have very little impact on refuge wildlife populations. If the research project is conducted with professionalism and integrity, potential adverse impacts are likely to be outweighed by the knowledge gained through allowing the research. The refuge maintains a database and geographic information system based maps of current research to prevent conflicts and imposes guidelines to prevent negative impacts, such as keeping vehicles on refuge roads, prohibiting intrusive marking of vegetation, or staggering the timing of research at same sites. Most research projects are conducted on small areas; few are refuge-wide.

Project-specific stipulations outlined in each SUP will act to minimize anticipated impacts of research projects. These stipulations will prevent impacts to wetlands, water quality, soils, and hydrology, or actions which would significantly affect fish, wildlife, or habitat that the refuge was established to protect. Projects which occur within the habitat of, or include direct monitoring of, threatened and endangered species will be subject to a Section 7 informal consultation with the Service's New Jersey Field Office under the Endangered Species Act (87 Stat. 854, as amended; 16 U.S.C. 1531 et. seq). Only with the approval of the Section 7 consultation will the refuge permit research to be conducted on habitats or individuals of threatened and endangered species. Research that could adversely affect critical habitat or threatened and endangered wildlife will not be permitted.

The potential for user conflicts is minimal with research projects conducted on the refuge. Generally, most research occurs within closed areas and away from public use trails and facilities. During hunting seasons, hunters may encounter monitoring plots or other research infrastructure in the field. These encounters, however, should be infrequent and researchers are encouraged to use low profile infrastructure to prevent disturbance or vandalism of study sites. In some cases, placing signs at study sites will be appropriate.

Overall, allowing well designed and properly reviewed research to be conducted by non-Service personnel is likely to have very little impact on refuge wildlife populations or plant communities simply by the nature of most proposed studies and the pre-screening of proposals by the refuge.

If the research project is conducted with professionalism and integrity, potential adverse impacts are likely to be minimal and outweighed by the knowledge gained about a species, habitat or public use. Additionally, researchers are required to present information to the refuge in the form of status reports and a final report as a condition of the SUP.

PUBLIC REVIEW AND COMMENT

This compatibility determination is being released concurrent with the draft Comprehensive Conservation Plan/Environmental Assessment for a 45-day review and comment period.

DETERMINATION (CHECK ONE BELOW):

- Use is not compatible
 Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY

All researchers will be required to submit a detailed research proposal following Service policy (Service Refuge Manual Chapter 4 Section 6). The refuge must be given at least 45 days to review proposals before initiation of research. If collection of wildlife is involved, the refuge must be given 60 days to review and decide whether to approve the proposal. Proposals will be prioritized and approved based on need, benefit, compatibility, and funding required. The decision whether to approve any research proposal will be at the sole discretion of the refuge manager.

- SUPs will be issued for all research conducted by non-Service personnel. The SUP will list all conditions that are necessary to ensure compatibility. The SUP will also identify a schedule for annual progress reports and the submittal of a final report or scientific paper. The regional refuge biologists, other Service divisions, and State agencies may be asked to review and comment on proposals.
- All researchers will be required to obtain appropriate State and Federal permits.
- All research projects will be designed to avoid significant impacts to hydrology, water quality, and soils.
- All research related SUPs will contain a statement regarding the Service's policy regarding disposition of biotic specimens. The current Service policy language in this regard (USFWS 1999) is, "*You may use specimens collected under this permit, any components of any specimens (including natural organisms, enzymes, genetic material or seeds), and research results derived from collected specimens for scientific or educational purposes only, and not for*

commercial purposes unless you have entered into a Cooperative Research and Development Agreement (CRADA) with us. We prohibit the sale of collected research specimens or other transfers to third parties. Breach of any of the terms of this permit will be grounds for revocation of this permit and denial of future permits. Furthermore, if you sell or otherwise transfer collected specimens, any components thereof, or any products or any research results developed from such specimens or their components without a CRADA, you will pay us a royalty rate of 20 percent of gross revenue from such sales. In addition to such royalty, we may seek other damages and injunctive relief against you.”

- Any research project may be terminated at any time for non-compliance with the SUP conditions, or modified, redesigned, relocated or terminated upon determination by the refuge manager that the project is causing unanticipated adverse impacts to wildlife, wildlife habitat, approved priority public uses, or other refuge management activities.
- The following language is included in all wildlife research SUPs: In consideration of being permitted to engage in the activity authorized under a permit at Great Swamp NWR, Permittee, being of lawful age, for himself and his personal representative, heirs, and next of kin, hereby releases, waives, and forever discharges the United States of America, its agents and employees, all for the purposes herein referred to as, Releasees, from any and every claim, demand, action or right of action, of whatsoever kind or nature, either in law or in equity, arising from or by reason of any bodily injury or personal injuries known or unknown, death and/or property damage resulting or to result from any injury, which may occur while engaged in the permitted activity, and covenants not to sue the Releasees, for any loss or damages, and any claim or damage therefore, on account of injury to the person or property or resulting in death of the Permittee, whether caused by the negligence of Releasees or otherwise.

JUSTIFICATION

The Service encourages approved research to further understanding of refuge natural resources. In fact, one of the goals that have guided management at the refuge is to encourage scientific study and research by colleges, universities, and qualified organizations and individuals that is directed toward fulfilling refuge objectives (USFWS 1987). Research by non-Service personnel adds greatly to the information base for refuge managers to make proper decisions. To protect habitat and wildlife, researchers are required to submit detailed research proposals. Proposals are reviewed and must be approved by refuge staff prior to implementation. In addition to the stipulations above, project-specific stipulations outlined in each SUP will act to minimize anticipated impacts of research projects. Projects which occur within the habitat of, or include direct monitoring of threatened and endangered species will be subject to an Intra-Service Section 7 consultation. Only with the approval of the Section 7 consultation will the refuge permit research to be conducted on habitats or individuals of threatened and endangered species. With the restrictions and approval process required to permit research activities this use will not

prevent the refuge from meeting its purposes established by the Fish and Wildlife Act (1956) and the Emergency Wetlands Resources Act (1986) of ensuring the protection, conservation, management and restoration of the wetlands of Great Swamp NWR, or for the management and conservation of wildlife or their habitats. Stipulations will be designed to prevent impacts to migratory birds to ensure the refuge meets its obligations under the Migratory Bird Conservation Act (1929). This use will not materially interfere with, or detract from, the Wilderness purpose of the refuge, because any manipulation of habitat (e.g., collecting, disturbing, or destroying plants, animals, or parts thereof) or use of any motorized equipment will be prohibited, and wilderness terrain, including trails, will be open to foot travel only. In most cases the research will help guide refuge management to meet its purposes more effectively. For these reasons, we have determined that research conducted by non-Service personnel will not materially interfere with or detract from the mission of the Refuge System or the purposes for which the refuge was established.

SIGNATURE:

Refuge Manager: _____
(Signature) (Date)

CONCURRENCE:

Regional Chief: _____
(Signature) (Date)

MANDATORY 10 -YEAR REEVALUATION DATE: _____

LITERATURE CITED

USFWS. 1987. Final Environmental Impact Statement. Master Plan. Great Swamp National Wildlife Refuge, Morris County, New Jersey. Department of the Interior, USFWS, Basking Ridge, NJ.

USFWS. 1999. Director's Order No. 109: Use of specimens collected on Fish and Wildlife Lands. March 30, 1999.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Swamp National Wildlife Refuge

Use: Police and Fire Training

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate

Appropriate

Refuge Manager: _____

Date: _____

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____

Date: _____

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

FWS Form 3-2319
02/06

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Swamp National Wildlife Refuge

Use: Police and Fire Training

NARRATIVE:

The use is to allow local police and fire personnel to conduct training exercises on the refuge. Training would be conducted at various times of the year during both day and night depending upon the needs of the refuge, the availability of approved locations, and the schedule of local police and fire departments. Local police and fire personnel would use the refuge for various training exercises including, but not limited to, search and rescue, rapid intervention, hostage rescue, and high-risk warrant service. In buildings planned for disposal, increasingly aggressive tactics (such as breaking in doors or windows or venting roofs) would be allowed as the date for demolition approaches. Training exercises would need to be cleared with the refuge manager in advance and are administered through a Special Use Permit (SUP). Local police and fire personnel would then be responsible for conducting the exercises in the manner and at the location(s) previously agreed upon. Police and fire personnel are covered by their own liability insurance. The refuge is named as an additional insured.

The refuge occasionally works with local emergency responders and benefits directly from their services. In the densely suburbanized areas that surround the refuge, training locations are in short supply and high demand. The refuge, however, has numerous locations that are suitable for emergency responder training. Refuge buildings planned for disposals are especially well suited for this type of training since they are vacant, readily available, and can be used with force without fear of damage. The familiarity gained when using refuge lands and structures for training benefits the refuge in the event there were a real emergency involving such lands or structures. The highly visible presence of police and fire personnel in and around abandoned refuge buildings may serve as a deterrent to unauthorized activity which has been a problem in the past. Putting these otherwise useless structures to good use prior to their removal may also engender support for the refuge's ongoing land acquisition program. Refuge law enforcement staff have been invited to participate in training exercises and have benefitted from these additional opportunities. Finally, the goodwill generated by providing training opportunities to local emergency responders serves to strengthen the refuge's relationship with these important partners.

While this use does not directly contribute to the public's understanding and appreciation of resources, it does not detract from the refuge fulfilling their establishing purposes of supporting research, habitats and wildlife.

COMPATIBILITY DETERMINATION

USE

Police and Fire Training

REFUGE NAME

Great Swamp National Wildlife Refuge

DATE ESTABLISHED

1960

ESTABLISHING AND ACQUISITION AUTHORITY

Great Swamp National Wildlife Refuge (NWR, refuge) was established primarily under the authorities of the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711, 40 Stat. 755) and the Migratory Bird Conservation Act of 1929 (16 U.S.C. 715-715r, 45 Stat. 1222), as amended, by transfer of approximately 2,900 acres of land donated to the Federal Government by the Great Swamp Committee of the North American Wildlife Foundation.

REFUGE PURPOSES

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

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” (Migratory Bird Conservation Act of 1929; 16 U.S.C. 715d)

“...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 ...” (Refuge Recreation Act; 16 U.S.C. 460k-1) *“the Secretary...may accept and use...real...property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors”* ... (Refuge Recreation Act; 16 U.S.C. 460k-2, as amended)

“...for 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 ...” (Emergency Wetlands Resources Act of 1986; 16 U.S.C. 3901(b)); and,

“... to conserve (A) fish or wildlife which are listed as endangered species or threatened species or (B) plants ...” (Endangered Species Act of 1973; 16 U.S.C. 1534).

“...to secure for the American people of present and future generations the benefits of an enduring resource of wilderness... wilderness areas ... shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness: ...” (Wilderness Act of 1964; Public Law 88-577; 16 U.S.C. 1131-1136)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Improvement Act; 16 U.S.C. 668dd(a)(2)).

DESCRIPTION OF PROPOSED USE

- (a) What is the use? Is the use a priority public use?** The use is to allow local police and fire personnel to conduct training exercises on the refuge. This is not a priority public use (National Wildlife Refuge System Improvement Act of 1997; Public Law 105-57).
- (b) Where would the use be conducted?** Training would be allowed only in pre-approved locations including, but not limited to, refuge buildings planned for disposal.
- (c) When would the use be conducted?** Training would be conducted at various times of the year during both day and night depending upon the needs of the refuge, the availability of approved locations, and the schedule of local police and fire departments.
- (d) How would the use be conducted?** Local police and fire personnel would use the refuge for various training exercises including, but not limited to, search and rescue, rapid intervention, hostage rescue, and high-risk warrant service. In buildings planned for disposal, increasingly aggressive tactics (such as breaking in doors or windows or venting roofs) would be allowed as the date for demolition approaches. Training exercises would need to be cleared with the refuge manager in advance and are administered through a Special Use Permit (SUP). Local police and fire personnel would then be responsible for conducting the exercises in the manner and at the location(s) previously agreed upon. Police and fire personnel are covered by their own

liability insurance. The municipality is required to include the refuge as an additional insured party to relieve the Federal Government of all tort liability.

(e) Why is this use being proposed? Local police and fire personnel are constantly training to improve their skills in an effort to better protect themselves and the public when responding to emergencies. The refuge frequently works with local emergency responders and benefits directly from their services. In the densely suburbanized areas that surround the refuge, training locations are in short supply and high demand. The refuge, however, has numerous locations that are suitable for emergency responder training. Refuge buildings planned for disposals are especially well suited for this type of training since they are vacant, readily available, and can be used with force without fear of damage. The familiarity gained when using refuge lands and structures for training benefits the refuge in the event there were a real emergency involving such lands or structures. The highly visible presence of police and fire personnel in and around abandoned refuge buildings may serve as a deterrent to unauthorized activity which has been a problem in the past. Putting these otherwise useless structures to good use prior to their removal may also engender support for the refuge's ongoing land acquisition program. Refuge law enforcement staff have been invited to participate in training exercises and have benefitted from these additional opportunities. Finally, the goodwill generated by providing training opportunities to local emergency responders serves to strengthen the refuge's relationship with these important partners. This use was found compatible in a compatibility determination (CD) issued in 2004.

AVAILABILITY OF RESOURCES

The resources necessary to provide and administer this use are available within the current and anticipated refuge budgets. Staff time associated with administration of this use is related to coordinating with local police and fire personnel, preparing SUPs for this use every year, reevaluating the appropriateness and compatibility of this use every 10 years, and monitoring to ensure that the conditions and stipulations of the SUPs and CD are followed. The deputy refuge manager has primary responsibility for these duties which require approximately one work day per year. The refuge's law enforcement officer occasionally participates in training exercises which occupy approximately one work day per year.

- GS-12 Deputy Refuge Manager: 1 day = \$347
 - GL-09 Federal Wildlife Officer: 1 day = \$213
- Total = \$560

ANTICIPATED IMPACTS OF THE USE

The use under consideration has been occurring on the refuge with negligible impacts since 2003. Sites have been and will continue to be selected that minimize impacts to refuge

operations and resources and to neighboring properties. Abandoned buildings are generally not considered wildlife habitat, however, all buildings will be checked for the presence of wildlife, especially owls and bats, before being approved for use.

PUBLIC REVIEW AND COMMENT

This CD is being released concurrent with the draft Comprehensive Conservation Plan/Environmental Assessment for a 45-day review and comment period.

DETERMINATION (CHECK ONE BELOW):

Use is not compatible

Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY

- This use is administered through SUPs issued to local police and fire departments every year. Stipulations are listed as “Special Conditions” in the SUP.
 - Stipulations/special conditions for police training are as follows:
 - No ammunition will be allowed in firearms. Paintballs or other non-lethal training ammunition are allowed.
 - Local police will be responsible for alerting neighbors and other interested parties in advance of training.
 - The refuge will provide access to the building(s) and local police will be required to restore building(s) to previous locked/boarded/secured condition.
 - Local police must coordinate with refuge manager prior to scheduling activities to ensure facilities are available and that the nature of training and the equipment planned for use is appropriate.
 - Nighttime access to the refuge is permitted.
 - A brief report of the training program’s purpose and the number of officers involved will be provided to the refuge manager within 2 weeks following each training session.
 - On average, no more than one training exercise will be allowed per month. Exceptions may be allowed by the refuge manager.
 - Training should be conducted so as to minimize damage to buildings and property and disturbance to wildlife and neighbors. This condition may be waived in advance by the refuge manager on a case-by-case basis. Windows and doors should not be broken without specific advance permission from the refuge manager.

- The refuge reserves the right to postpone or cancel any activity that may interfere with public safety or refuge management activities. Access to the refuge will not be permitted during the annual refuge deer hunt.
- All other refuge rules and regulations remain in force.
- Stipulations/special conditions for fire training are as follows:
 - Local fire department must coordinate with refuge manager at least 14 days prior to scheduling activities to ensure facilities are available.
 - Permittee must have a copy of their SUP with them at all times and present it as requested.
 - Permittee must avoid damage to the grounds and exterior of building(s) (i.e. ruts from vehicles; exterior doors, windows, and roof must remain intact). Local fire department is responsible for ensuring that the site is restored to its previous condition as necessary.
 - The refuge manager may authorize more realistic training scenarios involving more destructive tactics (i.e. breaking in a door or window or venting a roof) in structures soon to be demolished.
 - Heavy equipment may be parked at the Wildlife Observation Center in a manner that will not block access for other vehicles. No parking is allowed in the Wilderness Area. Off-road driving is prohibited.
 - Local fire department is responsible for contacting surrounding police, fire, emergency services, neighbors, etc. as necessary in advance to alert them of their activities.
 - Smoke will only be generated by a U.S. Environmental Protection Agency approved device and without fire hazard to the building.
 - The refuge reserves the right to postpone or cancel any activity that may interfere with public safety or refuge management activities.

JUSTIFICATION

Allowing local police and fire personnel to train on the refuge provides multiple tangible benefits. Most importantly, refuge lands, facilities, visitors, and resident staff benefit from the enhanced emergency response skills developed through such training. In addition to improved response capabilities, the refuge benefits from the greater familiarity of local emergency responders with its lands and facilities in the event of an actual emergency. Highly visible police and fire presence may provide a deterrent effect for vandal-prone abandoned refuge buildings. refuge law enforcement staff have benefitted from participating in training exercises. Also, the goodwill generated by allowing training opportunities serves to strengthen the refuge's close and ongoing relationship with these important partners. Since this use has been allowed, four to six training exercises have been held on the refuge each year with negligible impacts to refuge resources.

Allowing the continuation of police and fire training at Great Swamp NWR will not materially interfere with or detract from the fulfillment of the Refuge System mission or the purposes of the refuge.

SIGNATURE:

Refuge Manager: _____
(Signature) (Date)

CONCURRENCE:

Regional Chief: _____
(Signature) (Date)

MANDATORY 10-YEAR REEVALUATION DATE: _____

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Swamp National Wildlife Refuge

Use: National Weather Service Sensor

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Is the use consistent with public safety?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Is the use manageable within available budget and staff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(h) Will this be manageable in the future within existing resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes No

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate

Appropriate

Refuge Manager: _____

Date: _____

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: _____

Date: _____

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

FWS Form 3-2319
02/06

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Great Swamp National Wildlife Refuge

Use: Operation and maintenance of National Weather Service Automated Precipitation Sensor

NARRATIVE

This use is an National Weather Service (NWS) precipitation sensor that is an unobtrusive brown cylinder approximately 12 inches in diameter and 10 feet tall with a 4-foot radio antenna projecting from the top. The sensor is powered by a small solar panel attached to the side of the cylinder. The unit automatically sends precipitation data to an automated flood warning system receiving station by radio uplink. The data is made available to the public for viewing and download in near real-time from an NWS website. The NWS Meteorologist-In-Charge currently stationed at the Weather Forecast Office, Philadelphia/Mount Holly, New Jersey is responsible for coordinating activities with the refuge manager.

This sensor is very small and provides valuable information for the refuge, NWS, and public.

COMPATIBILITY DETERMINATION

USE

Operation and maintenance of National Weather Service Automated Precipitation Sensor

REFUGE NAME

Great Swamp National Wildlife Refuge

DATE ESTABLISHED

1960

ESTABLISHING AND ACQUISITION AUTHORITY

Great Swamp National Wildlife Refuge (NWR, refuge) was established primarily under the authorities of the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711, 40 Stat. 755) and the Migratory Bird Conservation Act of 1929 (16 U.S.C. 715-715r, 45 Stat. 1222), as amended, by transfer of approximately 2,900 acres of land donated to the Federal Government by the Great Swamp Committee of the North American Wildlife Foundation.

REFUGE PURPOSES

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

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” (Migratory Bird Conservation Act of 1929; 16 U.S.C. 715d)

“...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 ...” (Refuge Recreation Act; 16 U.S.C. 460k-1) *“the Secretary...may accept and use...real...property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors”* ... (Refuge Recreation Act; 16 U.S.C. 460k-2, as amended)

“...for 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 ...” (Emergency Wetlands Resources Act of 1986; 16 U.S.C. 3901(b)); and,

“... to conserve (A) fish or wildlife which are listed as endangered species or threatened species or (B) plants ...” (Endangered Species Act of 1973; 16 U.S.C. 1534).

“...to secure for the American people of present and future generations the benefits of an enduring resource of wilderness... wilderness areas ... shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness: ...” (Wilderness Act of 1964; Public Law 88-577; 16 U.S.C. 1131-1136)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The mission of the National Wildlife Refuge System (Refuge System) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Improvement Act; 16 U.S.C. 668dd(a)(2)).

DESCRIPTION OF PROPOSED USE

(a) What is the use? Is the use a priority public use? The use is the operation and maintenance of an automated radio-linked precipitation sensor on the grounds of Refuge Headquarters by the National Weather Service (NWS). The sensor is part of NWS’ “Integrated Flood Observing and Warning System” (IFLOWS) and “Automated Flood Warning System” (AFWS). This is not a priority public use (National Wildlife Refuge System Improvement Act of 1997; Public Law 105-57).

(b) Where would the use be conducted? The sensor is located on the lawn approximately 60 feet behind Refuge Headquarters.

(c) When would the use be conducted? The sensor was installed in January of 1988 and has been in continuous use since then. Approximately once per year, NWS personnel or their contractors perform maintenance on the unit.

(d) How would the use be conducted? The sensor apparatus itself is an unobtrusive brown cylinder approximately 12 inches in diameter and 10 feet tall with a 4-foot radio antenna projecting from the top. The sensor is powered by a small solar panel attached to the side of the cylinder. The unit automatically sends precipitation data to an AFWS receiving station by radio uplink. The data is made available to the public for viewing and download in near real-time from an NWS Web site. The NWS meteorologist-in-charge currently stationed at the Weather Forecast Office, Philadelphia/Mount Holly, New Jersey is responsible for coordinating activities with the refuge manager.

(e) Why is this use being proposed? NWS requested placement of the sensor on the refuge in the late-1980s as part of the expansion of its IFLOWS system to better monitor precipitation and forecast flooding within the Passaic River Basin. The refuge allowed installation of the sensor primarily as a public service to facilitate the protection of life and property in downstream communities. The refuge also uses data from the sensor to monitor precipitation patterns and supplement management programs and decision-making. Headquarters was chosen as the location for the sensor given the security a regularly staffed facility provides such expensive equipment at no additional effort or expense. This use was found compatible in a compatibility determination (CD) issued in 2004.

AVAILABILITY OF RESOURCES

The resources necessary to provide and administer this use are available within the current and anticipated refuge budgets. Staff time associated with administration of this use is related to coordinating with the NWS meteorologist-in-chief or their staff, preparing a Special Use Permit (SUP) for this use every 5 years, reevaluating the appropriateness and compatibility of this use every 10 years, and monitoring to ensure that the conditions and stipulations of the SUP and CD are followed. The deputy refuge manager has primary responsibility for these duties which require approximately one work day per year.

- GS-12 Deputy Refuge Manager: 1 day = \$347

ANTICIPATED IMPACTS OF THE USE

The use under consideration has been occurring continuously on the refuge with no apparent impacts since 1988. The sensor apparatus is located in an area of mowed lawn behind Refuge Headquarters and has a footprint of less than one square foot. This location was specifically chosen to prevent conflicts with refuge operations, to avoid potential disturbances, aesthetic or otherwise, and to provide some measure of protection for the expensive equipment. The sensor is a short walk from designated parking areas and access for maintenance is done by foot with no impact to refuge resources.

PUBLIC REVIEW AND COMMENT

This CD is being released concurrent with the draft Comprehensive Conservation Plan/Environmental Assessment for a 45-day review and comment period.

DETERMINATION (CHECK ONE BELOW):

- Use is not compatible
- Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY

- NWS’ use of the sensor is administered through a SUP issued every 5 years. Stipulations are listed as “Special Conditions” in the SUP.
 - The refuge manager should be contacted in advance prior to any personnel visiting the sensor for any purpose (e.g., routine maintenance, emergency repairs, etc.).
 - Routine maintenance should be performed during regular business hours.
 - The refuge manager should be notified within 60 days should operation of the sensor be discontinued. The sensor should be removed from the refuge within 60 days following such notification. NWS must restore the site to the refuge manager’s satisfaction following removal.

JUSTIFICATION

Use and maintenance of NWS’ precipitation sensor has resulted in no apparent impacts to refuge resources for nearly 25 years. Since no modifications to the sensor or its maintenance are anticipated, impacts and disturbance should remain negligible in the future. The sensor is an important node in NWS’ IFLOWS system, providing data used to monitor precipitation and forecast flooding within the Passaic River Basin. IFLOWS serves a critical function in protecting public safety and property within the Basin, including the refuge. Data from the sensor has also been helpful to the refuge in monitoring precipitation patterns and supplementing management programs and decision-making. Such information may also prove valuable for monitoring potential climatic changes. Allowing this use also strengthens the partnership between the Service and NWS for the benefit of both bureaus and the general public.

Allowing the continued use of NWS’ precipitation sensor at Great Swamp NWR will not materially interfere with or detract from the fulfillment of the Refuge System mission or the purposes of the refuge.

SIGNATURE:

Refuge Manager: _____
(Signature) (Date)

CONCURRENCE:

Regional Chief: _____
(Signature) (Date)

MANDATORY 10-YEAR REEVALUATION DATE: _____