

Environmental Assessment

Assabet River National Wildlife Refuge Hunt Program

**Eastern Massachusetts National Wildlife Refuge Complex
U. S. Fish and Wildlife Service**

April 2007

**FINDING OF NO SIGNIFICANT IMPACT
ASSABET RIVER NWR
HUNT PLAN**

The U.S. Fish and Wildlife Service (Service) will continue to allow white-tailed deer, turkey, American woodcock, squirrel, rabbit, and ruffed grouse hunting at the Assabet River National Wildlife Refuge (NWR). A draft Environmental Assessment (EA) analyzed the cumulative impacts of three hunt alternatives included in the 2003 draft Comprehensive Conservation Plan and EA (Draft CCP/EA) and the final program included in the 2005 final CCP. The Hunt EA evaluated four hunt program alternatives, carefully considering their impacts on the environment, their potential contribution to the mission of the National Wildlife Refuge System, and the refuge's purposes and goals. Hunting activities will be permitted, but administratively limited to those areas specified in the refuge-specific regulations. All or parts of the refuge may be closed to hunting at any time if necessary for public safety, to provide wildlife sanctuary, or for other reasons.

The Service has analyzed the following alternatives to the proposal in this Environmental Assessment:

Alternative A: This was the No Action Alternative in the EA required by the Council of Environmental Quality's regulations on implementing the National Environmental Policy Act. Under this alternative, the refuge would not be opened for hunting.

Alternative B: This alternative was the Service's Proposed Action in the Draft CCP/EA in 2003. This alternative opened the refuge to white-tailed deer, American woodcock, turkey, ruffed grouse, Eastern cottontail rabbit, and squirrel could be hunted. These new hunting opportunities would be limited to specific areas within the refuge. Some areas would be archery only.

Alternative C: Alternative C is similar to Alternative B, but would limit the hunting of white-tailed deer to archery and primitive firearms only. Some areas would be archery only. This alternative was included in the Draft CCP/EA.

Alternative D: This alternative was the Service's preferred alternative in the draft EA. This is the current hunt program at the refuge. It opened the refuge to white-tailed deer hunting, American woodcock, turkey, ruffed grouse, Eastern cottontail rabbit, and squirrel hunting on Assabet River NWR. This alternative increased the amount of areas that were limited to archery hunting only.

The preferred alternative (Alternative D) was selected over the other alternatives because:

1. The preferred alternative would allow the refuge to manage wildlife populations, allow the public to harvest a renewable resource, promote a wildlife-dependent

recreational opportunity, increase awareness of Assabet River NWR and the National Wildlife Refuge System, reduce conflicts with refuge neighbors and visitors and meet public demand.

2. The preferred alternative is compatible with general Service policy regarding the establishment of hunting on National Wildlife Refuges.
3. The preferred alternative is compatible with the purpose for which Assabet River NWR was established.
4. This proposal does not initiate widespread controversy, but there are some local people strongly opposed to hunting or certain types of hunting in specific parts of the refuge.
5. There are no conflicts with local, state, regional, or federal plans or policies.

Implementation of the agency's decision would be expected to result in the following environmental, social, and economic effects:

1. The refuge could better manage wildlife populations.
2. The public would be able to harvest a renewable resource.
3. The public would have increased opportunity for wildlife-dependent recreation.
4. Local businesses would benefit from hunters visiting the refuge.
5. Impacts to neighbors from white-tailed deer will be reduced.

Copies of the Environmental Assessment are available on-line at www.fws.gov/northeast/assabetriver or by writing to:

U.S. Fish and Wildlife Service
c/o Great Meadows NWR
73 Weir Hill Road
Sudbury, MA 01776

Therefore, it is my determination that the proposal does not constitute a major Federal action significantly affecting the quality of the human environment under the meaning of section 102(2)(c) of the National Environment Policy Act of 1969 (as amended). As such, an environmental impact statement is not required. This determination is based on the following factors (40 CFR 1508.27):

1. Both beneficial and adverse effects have been considered and this action will not have a significant effect on the human environment (EA, page 16, 45-46).
2. The project will not significantly affect any unique characteristics of the geographic area such as proximity to historical or cultural resources, wild and scenic rivers, or ecologically critical areas (EA, page 17).

3. There will be no cumulative significant impacts on the environment. Cumulative impacts have been analyzed with consideration of other similar activities on adjacent lands, in past action, and in foreseeable future actions (EA, pages 47-48).
4. The actions will not significantly affect any site listed in, or eligible for listing in, the National Register of Historic Places, nor will they cause loss or destruction of significant scientific, cultural, or historic resources (EA, page 44).
5. The actions will not adversely affect endangered or threatened species, or their habitats (EA, page 38-39).
6. The actions will not lead to a violation of federal, state, or local laws imposed for the protection of the environment (EA, pages 16).



Marvin Moriarty
Regional Director
U.S. Fish and Wildlife Service
Hadley, Massachusetts

Acting

4-27-07
Date

UNITED STATES FISH AND WILDLIFE SERVICE

ENVIRONMENTAL ACTION STATEMENT

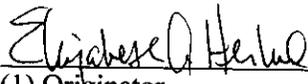
Within the spirit and intent of the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA), and other statutes, orders, and policies that protect fish and wildlife resources, I have established the following administrative record and determined that the selection of Alternative D, the Service's Preferred Alternative, which continues the existing hunt program at Assabet River National Wildlife Refuge, as described in the Assabet River NWR Hunt Program Environmental Assessment:

Check One:

- is a categorical exclusion as provided by 516 DM 2, Appendix 1 and 516 DM 6, Appendix 1. No further NEPA documentation will therefore be made.
- is found not to have significant environmental effects as determined by the attached environmental assessment and finding of no significant impact.
- is found to have significant effects and, therefore, further consideration of this action will require a notice of intent to be published in the Federal Register announcing the decision to prepare an EIS.
- is not approved because of unacceptable environmental damage, or violation of Fish and Wildlife Service mandates, policy, regulations or procedures.
- is an emergency action within the context of 40 CFR 1506.11. Only those actions necessary to control the immediate impacts of the emergency will be taken. Other related actions remain subject to NEPA review.

Other supporting documents (list):

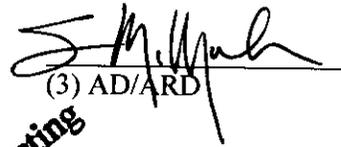
Signature Approval:


(1) Originator

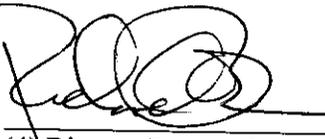
4/17/2007
Date


(2) W/O/RO Environmental
Coordinator

4/25/07
Date


(3) AD/ARD
Acting

4-27-07
Date


(4) Director/Regional
Director
Acting

4-27-07
Date

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I. Purpose and Need for Action

As a result of a 2003 lawsuit filed by the Fund for Animals, the U.S. Fish and Wildlife Service (Service) is addressing the cumulative impacts of hunting at 37 national wildlife refuges across the country which initiated new hunt programs from 1997-2003.

Environmental assessments (EAs) prepared for these programs, as well as for the 30 refuges that opened for hunting since the lawsuit was filed and seven additional refuges that proposed to establish new hunt programs in 2006-2007, are being amended or rewritten. A total of 74 refuges are affected by this decision. Assabet River National Wildlife Refuge (NWR) is one of the 30 refuges which established a hunting program after the 2003 lawsuit. Because the original analysis for the proposed hunt was completed as part of the Comprehensive Conservation Plan (CCP) process, it has been determined that an entirely new EA must be written to address the impact of hunting programs at Assabet River NWR.

Assabet River NWR was established in 2000 under the authority of an Act Authorizing the Transfer of Certain Real Property for Wildlife, or other Purposes (16 U.S.C. §667b). The purpose of the refuge is its particular value in carrying out the national migratory bird management program (16 U.S.C. §667b-d, as amended).

The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. §668dd et seq.) provides authority for the Service to manage the Refuge and its wildlife populations. In addition, it declares that compatible wildlife-dependent public uses are legitimate and appropriate uses of the Refuge System and are to receive priority consideration in planning and management. Six wildlife-dependent public uses were identified in the law: hunting, fishing, wildlife observation, wildlife photography, environmental education and interpretation. The Improvement Act directs managers to increase recreational opportunities including hunting on national wildlife refuges when compatible with the purposes for which the refuge was established and the mission of the National Wildlife Refuge System.

This EA is written in compliance with the requirements of the National Environmental Policy Act (NEPA).

II. Proposed Action and the Alternatives

Hunting at Assabet River NWR was first proposed in the *Draft Comprehensive Conservation Plan and Environmental Assessment for the Eastern Massachusetts National Wildlife Refuge Complex - Assabet River, Great Meadows, and Oxbow National Wildlife Refuges*, issued in April 2003 (U.S. Fish and Wildlife Service 2003). Following a public comment period, the *Final Comprehensive Conservation Plan for Assabet River National Wildlife Refuge* was issued in January 2005 (U.S. Fish and Wildlife Service 2005a). Both of the documents cited above in this paragraph are available for inspection at the headquarters of the Eastern Massachusetts NWR Complex, located at the Great Meadows NWR in Sudbury, Massachusetts.

This EA details the impacts associated with the hunt program alternatives that were developed in 2003 and the final program adopted in 2005. The following is a description of the alternatives that were first proposed in 2003. Please note that there were some inaccuracies in the maps for Alternative B and C in the draft CCP. These errors have been corrected in the figures included in this EA. All maps are located at the end of the EA in Appendix A.

Alternative A – Current Management in 2003 (See Map 1)

- Under this alternative, the refuge would remain closed to general public access and use due to a number of unmitigated safety hazards that existed on the property. No hunting for upland game, big game, or migratory game birds would be proposed.

Alternative B – The Service’s Proposed Alternative in 2003 (See Map 2)

- Archery, shotgun, and primitive firearm deer hunting opportunities would be provided on the refuge in accordance with Massachusetts State regulations and requirements. While deer hunting would be allowed throughout the refuge, archery only areas would be established external to Patrol Road from its southerly intersection with White Pond Road, northwesterly and then easterly, to its intersection with Old Marlborough Road in Maynard. Archery only areas would also be established on the west side of the parcel south of Hudson Road and in the very southeast corner of this parcel near Moore Road in Sudbury. A total of 2,230 acres would be opened to white-tailed deer hunting.
- Shotgun hunting of upland game (ruffed grouse, Eastern cottontail rabbit and gray squirrel) would be allowed. All State regulations and restrictions would apply and be enforced. While upland game hunting would be allowed throughout the refuge, archery only areas would be established external to Patrol Road from its southerly intersection with White Pond Road, northwesterly and then easterly, to its intersection with Old Marlborough Road in Maynard. Archery only areas would also be established on the west side of the parcel south of Hudson Road

and in the very southeast corner of this parcel near Moore Road in Sudbury. A total of 2,230 acres would be opened to upland game hunting.

- Turkey hunting (spring season only per current State regulations) would be allowed throughout the refuge. Archery only areas would be established external to Patrol Road from its southerly intersection with White Pond Road, northwesterly and then easterly, to its intersection with Old Marlborough Road in Maynard. Archery only areas would also be established on the west side of the parcel south of Hudson Road and in the very southeast corner of this parcel near Moore Road in Sudbury. A total of 2,230 acres would be opened to turkey hunting.
- Hunting for American woodcock would be allowed. Woodcock would be the only migratory bird hunting allowed on the refuge. Archery only areas would be established external to Patrol Road from its southerly intersection with White Pond Road, northwesterly and then easterly, to its intersection with Old Marlborough Road in Maynard. Archery only areas would also be established on the west side of the parcel south of Hudson Road and in the very southeast corner of this parcel near Moore Road in Sudbury. A total of 2,230 acres would be opened to woodcock hunting.

Alternative C (See Map 3)

- White-tailed deer hunting would be limited to archery and primitive firearms (muzzleloader) seasons only. A total of 2,230 acres would be opened hunting.
- Shotgun hunting of upland game (ruffed grouse, Eastern cottontail rabbit and gray squirrel) would be allowed. All State regulations and restrictions would apply and be enforced. While upland game hunting would be allowed throughout the refuge, archery only areas would be established external to Patrol Road from its southerly intersection with White Pond Road, northwesterly and then easterly, to its intersection with Old Marlborough Road in Maynard. Archery only areas would also be established on the west side of the parcel south of Hudson Road and in the very southeast corner of this parcel near Moore Road in Sudbury. A total of 2,230 acres would be opened to upland game hunting.
- Turkey hunting (spring season only per current State regulations) would be allowed throughout the refuge. Archery only areas would be established external to Patrol Road from its southerly intersection with White Pond Road, northwesterly and then easterly, to its intersection with Old Marlborough Road in Maynard. Archery only areas would also be established on the west side of the parcel south of Hudson Road and in the very southeast corner of this parcel near Moore Road in Sudbury. A total of 2,230 acres would be opened to turkey hunting.

- Hunting for American woodcock would be allowed. Woodcock would be the only migratory bird hunting allowed on the refuge. Archery only areas would be established external to Patrol Road from its southerly intersection with White Pond Road, northwesterly and then easterly, to its intersection with Old Marlborough Road in Maynard. Archery only areas would also be established on the west side of the parcel south of Hudson Road and in the very southeast corner of this parcel near Moore Road in Sudbury. A total of 2,230 acres would be opened to woodcock hunting.

The Service's proposed alternative in 2003 was adopted with some modifications and implemented in 2005. The changes to the hunt program adopted in the final CCP in January 2005 were described in the Assabet River NWR Hunting Plan (U.S. Fish and Wildlife Service 2005b). The current refuge hunt program will be called Alternative D in this EA, and is the Service's preferred alternative. Details follow below.

Alternative D – The *Current Refuge Hunt Program* (Preferred Alternative) (See Map 4)

- Archery, shotgun, and primitive firearm deer hunting opportunities is provided on the refuge in accordance with Massachusetts State regulations and requirements. While deer hunting is allowed throughout the refuge, archery only areas would be established external to Patrol Road from its southerly intersection with White Pond Road, northwesterly and then easterly, to its intersection with Old Marlborough Road in Maynard. The entire 290-acre tract south of Hudson Road is archery deer hunting only. A total of 2,230 acres would be opened to white-tailed deer hunting.
- Turkey hunting (spring season only) is allowed throughout the refuge. Archery only areas would be established external to Patrol Road from its southerly intersection with White Pond Road, northwesterly and then easterly, to its intersection with Old Marlborough Road in Maynard. The entire 290-acre tract south of Hudson Road is archery turkey hunting only. A total of 2,230 acres would be opened to turkey hunting.
- Hunting for American woodcock is allowed only on the main part of the refuge north of Hudson Road with the exception of the archery-only area identified above. No woodcock hunting is allowed in archery only areas.
- Upland game (ruffed grouse, Eastern cottontail rabbit, and gray squirrel) hunting is allowed only on the main part of the refuge north of Hudson Road with the exception of the archery-only area identified above. No upland game hunting is allowed in archery only areas.

The *Current Hunt Program* provides the public with a high quality recreational experience and provides the refuge with a wildlife management tool to promote the biological integrity of the refuge.

III. Affected Environment

A. Physical Resources

1. Location

The 2,230-acre Assabet River NWR is approximately 20 miles west of Boston in the towns of Hudson, Maynard, Stow, and Sudbury. The Refuge is in two separate parcels—a 1,930-acre section unit north of Hudson Road and a 300-acre area south of Hudson Road – and covers approximately 3.5 miles. Before its establishment in 2000, the land had been under the jurisdiction of the U.S. Army since the early 1940's. It had served as a military base and is still known locally as the “Army Depot” or the “Sudbury Annex”.

The main entrance and parking area is on Hudson Road in Sudbury, Massachusetts near the Stow town line. A second entrance with a 10-car parking lot, known as the North Gate or the Stow Gate, is located in Stow off White Pond Road. A third entrance, which at the present time is for foot traffic only, is located on Old Marlborough Road in Maynard at the East Gate or FEMA Gate. Visitors also enter the south section from Moore Road in Sudbury. This is an unofficial, walk-in entrance that will be made official sometime in the near future.

From a biological and ecosystem perspective, it is useful to consider how Assabet River NWR fits into other classification frameworks. The Nature Conservancy has divided the continental United States into 63 ecoregions—large geographic areas that share similar geologic, topographic, ecological, and climatic characteristics. These ecoregions are modified from the U.S. Forest Service “Bailey System.” Assabet River NWR is within the Lower New England/Northern Piedmont Ecoregion that stretches from Maine to Virginia.

The Refuge lies with the Gulf of Maine watershed. It is an immense area, extending from eastern Quebec to Cape Cod, Massachusetts, with a land base of 69,115 square miles and a water surface of 33,054 miles. The Assabet River flows just north of the refuge. At its confluence with the Sudbury River in Concord, it becomes the Concord River, which flows through the Great Meadows NWR. These rivers are major tributaries to the Merrimack River which flows into the Gulf of Maine.

Flyways have been used for many years in North America as the unit for managing waterfowl populations because they allow land managers to link efforts to conserve migratory bird species and their habitats on breeding, migration, and wintering grounds. The Atlantic Coast Joint Venture (JV) area includes the entire U.S. Atlantic Coast lying completely within the U.S. portion of the Atlantic Flyway. In this large area, the JV partners work together to assess the status, trends, and needs of bird populations and their habitats. The partners then use this information to help guide the distribution of resources to the needs/issues of highest priority. Assabet River NWR is within the Atlantic Coast Joint Venture – Sudbury-Assabet-Concord and Nashua River Systems. http://www.fws.gov/northeast/migratorybirds/plans_partnerships.htm

Nationally, large physiographically-based areas known as Bird Conservation Regions (BCR) have been identified. These areas tend to have similar biotic and non-biotic features that are useful for assessing conservation priorities and determining the importance of an area relative to other parts of the country. A cooperative initiative to protect landbirds, known as Partners in Flight (PIF), identifies conservation priorities within specific physiographic areas. Assabet River NWR is in BCR 30, the Southern New England/Mid-Atlantic Coast region and PIF Physiographic Area 9—Southern New England, a subset of BCR 30. PIF 9 covers parts of northern New Jersey, southern New York including Long Island, the majority of Connecticut, all of Rhode Island, most of eastern Massachusetts, the southeastern corner of New Hampshire, and south-coastal Maine. http://www.fws.gov/northeast/migratorybirds/plans_partnerships.htm

2. Geology and Soils

Evidence of glaciation at Assabet River NWR is readily observable. The Wisconsin glacier (12,000 B.P.) deposited sediment and other materials that shaped the local landscape and the landform of the refuge. Eight surface depositional types are found on the refuge, and six of these are from glacial action: kames, kame terraces, kame fields, outwash plains, ground moraines and drumlins. The remaining two sediment deposits are alluvium swamps. Glacial tills are compact, unsorted mixtures of clay, silt, sand, gravel and boulders. The hilly portions of the refuge tend to be till, with the flatter areas being glacial outwash. The tills may reach thicknesses of up to 40 feet in moraine areas, and up to 80 feet in drumlins. Alluvium is generally fine gravel, and the swamps are predominately sand, silt and organic matter. Kames are irregularly shaped mounds of poorly sorted sands and gravels. Kame fields are simply described as areas of closely spaced kames. Kame terraces were formed by glacial meltwater depositing suspended matter between ice sheets. Vose Hill and the hill immediately south of Tuttle Hill are mapped as drumlins, glacially formed accumulations of till indicating by their orientation the direction of ice flow. A million-year old river valley underlies Lake Boon, White Pond and the southern portion of the Refuge.

Soils across the refuge are comprised of a diverse range of types reflecting varied glacial and alluvial depositional processes. The U.S. Department of Agriculture, Natural Resources Conservation Service maps the more common as Carver, Windsor, Merrimac, Paxton, Deerfield, Montauk, and Charlton-Hollis series in the uplands; and, the Swansea and Freetown series in the wetlands.

3. Hydrology

Most of the northern section and westernmost parts of the southern section of Assabet River NWR are within the Assabet River drainage basin. The majority of the northern portion of the refuge drains northward through Taylor Brook and its tributaries, including Honey Brook. Two small, intermittent streams also flow from the northern portion of the refuge into the Assabet River. The central and eastern area of the southern portion of the refuge is within the Sudbury River drainage basin. Marlboro Brook drains from the

southeastern portion of this section of the refuge into Hop Brook, a tributary of the Sudbury River, just above Stearns Millpond. The western portions of this section of the refuge drain toward White Pond, which has no surface outlet, but is thought to drain underground to Lake Boon and thence to the Assabet River.

The water table under much of Assabet River NWR is shallow, as indicated by the extensive swamps, bogs, and waterholes found on the property. Groundwater discharge is thought to be supplying much of the flow occurring through the outwash plains underlying the lowlands of the site. The poorly drained lowland soils have supported the establishment of extensive and diverse wetland habitats, which include forested and shrub-dominated wetlands, bogs, emergent wetlands, open-water bodies in the form of several lakes and ponds, an abandoned cranberry bog, and scattered seasonally flooded vernal pools. Puffer Pond is a natural pond, most likely of glacial origin. It is approximately 30 acres, and lies wholly within the refuge. A portion of the northern shoreline of Willis Pond is on the refuge boundary. Willis Pond is approximately 68 acres. The western edge of Cutting Pond, a privately owned 20-acre pond, borders the refuge.

The Sudbury-Assabet-Concord (SuAsCo) river basin encompasses 371 square miles of land and 88.1 river miles, from Billerica in the north to Westborough and Hopkinton in the south. These three rivers and their associated tributaries drain the basin into the Merrimack River in Lowell.

The Assabet River is 31 miles long and drains 175 square miles. It starts in Westborough and flows northeast through the urban centers of Northborough, Hudson, Maynard, and Concord. Between these suburbanized centers lie rural and undeveloped watersheds. The repeating discharge of sewage treatment plants creates highly eutrophic sections of the river in the summer, containing large amounts of aquatic growth, particularly algal blooms.

The Sudbury River is 41 miles long and drains 169 square miles. It begins in Cedar Swamp Pond in Westborough, flows eastward to Framingham, then flows north through the towns of Sudbury, Wayland, Lincoln, and into Concord. The Sudbury River has three distinct sections: a narrow, rapidly flowing stream upstream of Framingham, two large impoundments one of which is part of the Metropolitan District Commission Water Supply the other created by the Colonna Dam in Saxonville (Framingham), and lastly the third section is the most unique as it flows through the Refuge. From here it joins with the Assabet River to form the Concord River.

The Concord River is 15.8 miles long and drains 27 square miles. It forms at the confluence of the Assabet and Sudbury Rivers in Concord, flows north through the towns of Carlisle, Bedford, Billerica, and then enters the Merrimack River in the City of Lowell. The Concord River retains the slow-moving characteristics of the third section (above) of the Sudbury River.

All sections of the Assabet River are included in the Massachusetts Department of Environmental Protection 303(d) List of Waters as failing to meet Class B standards, primarily due to elevated levels of phosphorus and nitrogen, and low dissolved oxygen concentrations. The source of nutrient input is thought to be associated with discharges from seven municipal wastewater treatment facilities, storm water runoff from lawns and agricultural lands and releases from nutrients previously settled in the sediments of the river bottom (USFWS 2005).

4. Air Quality

The State air quality report from 2005 contains the most recent data available from the Massachusetts Department of Environmental Protection (MassDEP), Air Assessment Branch. The report contains data for several different pollutants: ozone (O₃), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide, particulate matter (2.5 microns and 10 microns) and lead. During 2005, MassDEP operated a network of 28 monitoring stations located in 20 cities and towns. Data for O₃ is available from a monitoring station in Stow. Stations in Boston and Worcester monitor all pollutants. MassDEP submits ambient air quality data to the national Air Quality System database administered by the U.S. Environmental Protection Agency (USEPA).

Ozone is the only pollutant for which Massachusetts monitors indicate violations of National Ambient Air Quality Standards (NAAQS). Massachusetts is in attainment for the other criteria pollutants. An ozone exceedance occurs when monitored ozone concentrations exceed the NAAQS. Ozone is collected as an hourly average of continuous data and is then used to determine the 8-hour average value for the day. An exceedance of the 8-hour standard is an 8-hour averaged value that is equal to or greater than 0.085 ppm. In 2005, there were 3 days when the former 1-hour ozone standard was exceeded and 16 days when the 8-hour ozone standard was exceeded. Exceedances occurred twice at the Stow monitoring station.

B. Biological Resources

1. Vegetation

Seventy percent (1,561 acres) of the refuge is forested, predominantly in white pine-mixed hardwoods. About 9 % (193) is in an old field/grassland mosaic. The remaining 21% (476 acres) is wetland habitat, including a remnant Atlantic white cedar swamp, six dwarf-shrub bogs, two minerotrophic peatland bogs, several vernal pools, and historical cranberry bogs.

A floristic survey of the refuge in 1992 documented 667 plant species including several rarities (Hunt 1992). A review of aerial photos, discussions with local people, and the field reconnaissance noting extensive stone walls, second growth forests and old cranberry bogs, confirm the extensive farming history of the land prior to the Army's acquisition in the early 1940s.

Poorly drained lowland soils on the refuge support extensive and diverse wetland communities. Hunt (1992) reported forested wetlands with an overstory of red maple (*Acer rubrum*), black ash (*Fraxinus niger*), swamp white oak (*Quercus bicolor*), eastern hemlock (*Tsuga canadensis*) and white pine (*Pinus strobus*) and a shrub understory of sweet pepperbush (*Clethra alnifolia*), swamp azalea (*Rhododendron viscosum*), winterberry (*Ilex verticillata*), and maleberry (*Lyonia ligustrina*). The shrub-dominated wetlands supported speckled alder (*Alnus serrulata*), silky dogwood (*Cornus ammomum*), gray-stemmed dogwood (*Cornus racemosa*), elderberry (*Sambucus canadensis*), black chokeberry (*Aronia melanocarpa*), buttonbush (*Cephalanthus occidentalis*), meadowsweet (*Spiraea latifolia*), and steeplebush (*Spiraea tomentosa*). Emergent wetland vegetation included broad-leaved cattail (*Typha latifolia*), sedges (*Abildgaardia*), blue-joint grass (*Hemarthria*), boneset (*Tamulipa*), joe-pye-weed (*Eupatorium*), pickerelweed (*Pontederia cordata*), arrowhead (*Sagittaria L.*), smartweed (*Polygonum amphibium*), spike rush (*Eleocharis R. Br.*), waterlily (*Nymphaea*), and purple loosestrife (*Lythrum salicaria*). The dwarf shrub bogs, peatlands, Atlantic white cedar swamp, and kettlehole pond support exceptionally high plant diversity. Assabet River NWR also supports at least 50 vernal pools (Hunt 1992).

Assabet River NWR lies within the central hardwoods (Appalachian oak)-hemlock, white pine zone. This is a region where the northern hardwoods (beech, birch, maple) overlap with the oaks and hickories of the south. A majority of the uplands on the refuge have succeeded back to forest dominated by white pine, red oak (*Quercus rubra*), and other hardwoods. Common hardwoods include red maple (*Acer rubrum*), red oak, white oak (*Quercus alba*), quaking aspen (*Populus tremuloides*), American beech (*Fagus grandifolia*), black cherry (*Prunus serotina var. serotina*), American elm (*Ulmus americana*), shagbark hickory (*Carya ovata var. ovata*), and birch (*Betula sp.*). The understory is a mix of sassafras (*Sassafras albidum*), blueberry (*Vaccinium sp.*), and dogwood (*Cornus sp.*).

Rare plants that are found on the refuge are: Few-fruited sedge (*Carex oligosperma*), Grass-leaved ladies-tresses (*Spiranthes vernalis*), New England blazing star (*Liatris borealis*), and Philadelphia panic grass (*Panicum philadelphicum*).

Hunt (1992) recorded 19 exotic plant species on the refuge (see Table 1 below). In 2002, the Service's Region 5 initiated a systematic effort to identify, locate, and map invasive plant species occurring on Refuge lands, leading to an integrated management plan that guides invasive species control, monitoring and evaluation projects. Funding from the Service, the Friends of Assabet River NWR, and the Sudbury Foundation led to a three-year evaluation of the entire refuge by Massachusetts Audubon Society to identify, map, and determine the abundance of invasive species. Exotic, invasive species known to occur on the refuge are listed below.

Table 1. Invasive Plant Species on Assabet River NWR		
Common Name	Scientific Name	Presence
Asiatic Bittersweet	<i>Celastrus orbiculata</i>	X
Autumn Olive	<i>Elaeagnus umbellata</i>	X
Bittersweet Nightshade	<i>Solanum dulcamara</i>	X
Black Locust	<i>Robinia pseudoacacia</i>	X
Black swallowwort	<i>Cynanchum louiseae</i>	X
Burning Bush	<i>Euonymus alata</i>	X
Celandine	<i>Chelidonium majus</i>	X
Common Barberry	<i>Berberis vulgaris</i>	X
Cypress Spurge	<i>Euphorbia cyparissias</i>	X
European Buckthorn	<i>Rhamnus cathartica</i>	X
Garlic Mustard	<i>Alliaria petiolata</i>	X
Gill-over-the-Ground	<i>Glechoma hederacea</i>	X
Glossy Buckthorn	<i>Rhamnus frangula</i>	X
Honeysuckle	<i>Lonicera sp.</i>	X
Japanese Barberry	<i>Berberis thunbergii</i>	X
Japanese Honeysuckle	<i>Lonicera japonica</i>	X
Japanese Knotweed	<i>Polygonum cuspidatum</i>	X
Moneywort	<i>Lysimachia nummularia</i>	X
Multiflora Rose	<i>Rosa multiflora</i>	X
Norway Maple	<i>Acer platanoides</i>	X
Phragmites	<i>Phragmites australis</i>	X
Privet	<i>Ligustrum spp.</i>	X
Purple Loosestrife	<i>Lythrum salicaria</i>	X
Sheep Sorrel	<i>Rumex acetosella</i>	X
Spotted Knapweed	<i>Centaurea biebersteineii</i>	X
Tree-of-Heaven	<i>Ailanthus altissima</i>	X
True Forget-me-not	<i>Myosotis scorpioides</i>	X
Yellow Iris	<i>Iris pseudacorus</i>	X
White Poplar	<i>Populus alba</i>	X

2. Wildlife

Assabet River NWR provides habitat for a rich diversity of wildlife. Over 137 species of birds, 120 species of moths, butterflies and dragonflies, 25 species of mammals and 20 species of reptiles and amphibians occur on the refuge for at least part of the year. The refuge provides a mix of wetland, upland field, scrub-shrub and forested habitats. This combination provides excellent habitat for a variety of bird species year round. A number of state-listed species are found on the refuge during various seasons.

Many songbird species nest, feed, and rest on the refuge. They include gray catbird (*Dumetella carolinensis*), redwinged blackbird (*Agelaius phoeniceus*), swamp sparrow (*Melospiza georgiana*), common yellowthroat (*Geothlypis trichas*), Baltimore oriole (*Icterus galbula*), veery (*Catharus fuscescens*), wood thrush (*Hylocichla mustelina*), hermit thrush (*Catharus guttatus*), scarlet tanager (*Piranga olivacea*), ovenbird (*Seiurus aurocapillus*), great crested flycatcher (*Myiarchus crinitus*), and eastern towhee (*Pipilo erythrophthalmus*). A number of bird species nesting on or migrating through the refuge are neotropical migrants.

Nesting marshbirds have been consistently recorded on some parts of the refuge, particularly the wetlands at the south end of Taylor Brook and the north end of Puffer Pond. This wetland complex was monitored annually from 2000-2005 and nesting great blue heron (*Ardea herodias*) and Virginia rail (*Rallus limicola*) were regularly recorded. In addition, sora (*Porzana carolina*), least bittern (*Ixobrychus exilis*), American bittern (*Botaurus lentiginosus*) and king rail (*Rallus elegans*) have all been recorded in this wetland complex during the breeding season since 2000.

The Service has not conducted any formal surveys or inventories on the refuge for mammals. Since 2003, however, volunteers with Assabet Keeping Track have been monitoring transects four times a year at various locations throughout the refuge. Major wildlife travel corridors have been identified and the presence of several mammalian species has been confirmed. These species include: Virginia opossum (*Didelphis virginiana*), shrew species (*Sorex spp.* and *Blarina spp.*), chipmunks (*Tamias striatus*), eastern gray squirrel (*Sciurus carolinensis*), white-tailed deer (*Odocoileus virginianus*), muskrat (*Ondatra zibethica*), coyote (*Canis latrans*), red fox (*Vulpes fulva*), American beaver (*Castor canadensis*), mink (*Mustela vison*), and fisher (*Martes pennanti*).

While comprehensive inventories of reptiles and amphibians have not been conducted, we have conducted surveys since 2000 to monitor frog and toad species on the refuge. Species recorded include: green frog (*Rana clamitans*), bullfrog (*Rana catesbiana*), northern spring peeper (*Pseudacris crucifer*), pickerel frog (*Rana palustris*), gray tree frog (*Hyla versicolor*), wood frog (*Rana sylvatica*) and American toad (*Bufo americanus*). Reptile species found on the refuge include spotted turtle (*Clemmys guttata*), painted turtle (*Chrysemys picta*), snapping turtle (*Chelydra serpentina*), common garter snake (*Thamnophis sirtalis*) and northern water snake (*Nerodia sipedon*).

Suitable habitat exists for the Blanding’s turtle (*Emys blandingii*). The Service is evaluating options to repatriate Blanding’s turtles to the refuge in the near future.

Several vernal pools occur on the Assabet River NWR. Vernal pools offer critical breeding habitat for some species of amphibians and invertebrates including blue-spotted salamander (*Ambystoma laterale*), wood frog, spotted salamander (*Ambystoma maculatum*), and fairy shrimp. These species also require relatively undisturbed upland habitat for foraging and dispersal. Wood frog juveniles migrate up to 3,800 feet from the vernal pool where they hatched, while adults move up to 1,500 feet from the pool. The blue-spotted salamander is a state species of concern.

No formal surveys have been conducted for butterflies, dragonflies, damselflies, and other invertebrates. Mello and Peters conducted an extensive moth survey in 1992. Invertebrates are an important component of the food chain and are of biological importance to other refuge wildlife.

Detailed species lists are available in the Final Comprehensive Conservation Plan for Assabet River NWR, which can be viewed on line at <http://www.fws.gov/northeast/planning>.

Refuge staff members are currently developing a habitat management plan for Assabet River NWR. The species and habitats that are likely to be of greatest management concern are listed below in Table 2.

Table 2. Highest Priority Habitats and Associated Focal Species on Assabet River NWR.

Highest Priority Habitat Types	Selected Associated Focal Species
Freshwater Wetlands Complex (Emergent Marsh, Scrub Shrub, Forested Wetland, Freshwater Pond, Peatlands)	breeding marsh birds, migrating songbirds and waterfowl, resident turtles, rare plants
Vernal Pools	blue-spotted salamander
Oak-Pine Forest	nesting songbirds (scarlet tanager, Baltimore oriole, black-and-white warbler, rose-breasted grosbeak, wood thrush)
Shrubland	nesting birds (Eastern towhee, blue-winged warbler, whip-poor-will, woodcock), migrating songbirds
Moderate Priority Habitat Types	Selected Associated Focal Species
Grassland	nesting birds (bobolink)
Exposed Sands	nesting turtles, rare plants

C. Socio-economic/Cultural Resources

1. Socioeconomic Resources

Assabet River NWR is located in Middlesex County. The four towns in which the refuge is located have a long, rich history and strive to maintain their small town, community atmosphere. Each refuge town offers a unique blend of urban or suburban and rural qualities. A rich agricultural past is sometimes evident through the protection of former farmland as private, local, state or Federal conservation land or open space. However, agriculture has been replaced by residential land use, interspersed with small retail and light industry. Hudson and Maynard have a past history as mill towns. Old mills have been converted to office space; others that are vacant are poised for redevelopment.

Protection of natural resources, natural beauty, and architectural integrity is a common characteristic of each town. Retaining open space, protecting rural character, protecting wildlife, and having natural lands available for outdoor recreation are high priorities for local residents. The median per capita income and average household educational attainment of the towns in which the refuge is located are among the highest in the state. Many residents work in downtown Boston or at the universities in Cambridge and surrounding towns. People are actively engaged in their families and communities, and many people are passionate about the protection of wildlands for people and wildlife. This passion extends to the Assabet River NWR.

2. Cultural Resources

The body of federal historic preservation laws has grown dramatically since the enactment of the Antiquities Act of 1906. Several themes recur in these laws, their promulgating regulations, and more recent Executive Orders. They include: 1) each agency is to systematically inventory the historic properties' on their holdings and to scientifically assess each property's eligibility for the National Register of Historic Places; 2) federal agencies are to consider the impacts to cultural resources during the agencies' management activities and seek to avoid or mitigate adverse impacts; 3) the protection of cultural resources from looting and vandalism are to be accomplished through a mix of informed management, law enforcement efforts, and public education; and 4) the increasing role of consultation with groups, such as Native American tribes, in addressing how a project or management activity may impact specific archaeological sites and landscapes deemed important to those groups. The U.S. Fish and Wildlife Service, like other federal agencies, are legally mandated to inventory, assess, and protect cultural resources located on those lands that the agency owns, manages, or controls. The Service's cultural resource policy is delineated in 614 FW 1-5 and 126 FW 1-3. In the Service's Northeast Region, the cultural resource review and compliance process is initiated by contacting the Regional Historic Preservation Officer/Regional Archaeologist (RHPO/RA). The RHPO/RA will determine whether the proposed undertaking has the potential to impact cultural resources, identify the "area of potential effect," determine the appropriate level of scientific investigation necessary to ensure legal compliance, and

initiates consultation with the pertinent State Historic Preservation Office (SHPO) and federally recognized Tribes.

Assabet River NWR is located within the southern Merrimack River Basin and the SuAsCo rivers basin. The first Native American occupation in this area occurred during the Paleoindian period (11000-8000 Before Present (B.P.)). Settlement and land use patterns were most likely a widely spaced network of site locations within a very large territory. By the Middle Archaic period (8000-4500 B.P.), hunters and gatherers focused their subsistence strategies on drainage systems. Fishing gear appeared during that time, and people heavily used local sources of stone. The refuge environment was ideal for the people of the Middle Archaic, and several sites near the refuge are known. Intensive hunting and fishing occurred all over the region during the Late Archaic (4500-3000 B.P.). Toward the end of the prehistoric period (Late Woodland period 1000 B.P. to the arrival of Europeans in New England), it appears that interior river drainages and some upland settings were a vital part of settlement patterns.

Within the Assabet River NWR, there are a variety of environmental zones that represent areas of both high and low natural resource potential. Puffer Pond and the complex of streams and wetlands associated with it is the most clear general zone of high natural resource potential (Hudson 1889; Ritchie 1980, Hoffman 1983). This pond, along with Willis Pond, is one of the few natural lakes or ponds in the western portion of the town of Sudbury (Gallagher et. al. 1986). It is directly connected to the Assabet River by Taylor Brook. Large areas of marsh and wooded wetlands, extending the entire length of Taylor Brook, form the outlet at the north end of Puffer Pond to the confluence with the Assabet River. This area would have been excellent habitat for a variety of waterfowl, fur-bearing mammals, and other species exploited by Native Americans.

The central portion of the refuge contains several large areas of wooded wetlands covering several hundred acres. These wetlands will have provided seasonally concentrated natural resources suitable to winter camps for humans. One prehistoric site has been located in the central wetland portion of the refuge, and with further testing, several more will likely be found.

The elevated, rocky hills within the refuge will have provided another type of environment for humans to utilize. This area will have sustained deciduous forest which will have provided habitat for deer, bear, raccoon and bobcat, as well as acorns, chestnuts and hickory nuts. Five prehistoric sites have been identified through limited archaeological testing (Gallagher et. al. 1986). Most likely, more sites located in this environment representing all the major time periods within Native American history will be identified. Assabet River NWR offers a wide variety of environmental zones ideal for Native American settlement throughout history. This area was a cultural focus of the Merrimack River Basin. The limited archaeological studies completed have revealed prehistoric archaeological sites in all of the various refuge environments (Gallagher et. al. 1986). The refuge should be considered highly sensitive for such cultural resources. The refuge has the potential to contribute information that is significant in understanding

Native American settlement patterns and environmental uses for this region of Massachusetts.

Europeans began to settle the refuge area around 1650. After King Philip's War in 1675, with Native American nations losing political strength, the English were able to develop and settle the refuge area (Gallagher et. al. 1986). The people that settled in the refuge area were primarily involved with farming activities. By 1750, the settlement pattern of the refuge area was influenced by increasing development. The towns that lie within the refuge supplied Boston with timber and agricultural products. Mills developed during the 19th century.

Within the boundaries of the refuge, many farms and residences were built since the early 19th century. Some, such as the Rice/Vose Tavern and Puffer House, were 17th and 18th century in origin. Land use within the refuge was almost exclusively agricultural and pastoral, with some tracts of woodland. By the early 20th century, many of the older farms were acquired and new houses were constructed by Finnish immigrants until 1942, when the military acquired the property (Gallagher et. al. 1986). A few of the farmhouses still remain on the refuge, although all are in a serious state of decay and will be removed at a future date.

The area that is now the refuge became government property when a formal petition was filed by the United States to acquire the land by eminent domain. The location was selected for strategic reasons – it was well out of range of naval guns – and for its close proximity to four active railroad lines. Originally known as the Maynard Ammunition Backup Storage Point, the facility was used to store surplus ammunition during the war effort. Provision for the safe storage of ordnance was ensured by the construction of 50 earth-covered bunkers located around the central section of the facility. Railroad spurs were developed to provide access between bunkers and the existing main railroad lines (U.S. Army 1995). Some of these railroad spurs have been and are currently being converted to wildlife observation trails.

IV. Environmental Consequences

A. Effects Common to all Alternatives

1. Environmental Justice

Executive Order 12898 “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” was signed by President Bill Clinton on February 11, 1994, to focus federal attention on the environmental and human health conditions of minority and low-income populations with the goal of achieving environmental protection for all communities. The Order directed federal agencies to develop environmental justice strategies to aid in identifying and addressing disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. The Order is also intended to promote nondiscrimination in federal programs substantially affecting human health and the environment, and to provide minority- and low-income residents access to public information and participation in matters relating to human health or the environment. This EA has not identified any adverse or beneficial effects for any alternative unique to minority or low-income populations in the affected area. Additionally, none of the alternatives will disproportionately place any adverse environmental, economic, social, or health impacts on minority or low-income populations.

2. Refuge Physical Environment

Other than Alternative A, which would have no impacts to refuge lands, impacts of each remaining alternative on the refuge physical environment would be minimal to negligible.

No adverse impact to vegetation from trampling by hunters is likely, as most species will have senesced or become dormant. The refuge would control hunter access to minimize any local vegetation disturbance that may be caused by hunters. Minor, temporary disturbance to surface soils and vegetation would occur as a result of hunter activity in areas open for hunting. Impacts would be limited because refuge regulations prohibit cutting or trimming tree branches greater than the diameter of a quarter, as well as driving nails, spikes, screws or other metal objects into trees.

Impacts to the natural hydrology would be negligible. Impacts to air and water quality will be minimal and only due to refuge visitors’ automobile emissions and run-off from roads and trails. Existing State water quality criteria and use classifications are adequate to achieve desired on-refuge conditions.

3. Cultural Resources

Hunting, regardless of method or species hunted, is a consumptive activity that does not pose any threat to prehistoric or historic properties on and/or near the refuge. There would be no impact from Alternative A to cultural resources because the refuge would be closed to public use. For the other alternatives, no impacts to cultural resources are anticipated above what may be caused by any refuge visitor. Although hunters would be able to access parts of the refuge that are closed to non-hunters, this access alone is not expected to increase vandalism or disturbance to cultural resources by individuals while they are hunting, nor is it likely that hunters will be more likely to engage in vandalism or disturbance than any other refuge visitor.

B. Effects of Specific Alternatives

1. Alternative A – Current Management in 2003

a. Biological Impacts

Long-term closure of Assabet River NWR to white-tailed deer hunting has allowed the deer herd to increase because there are few natural population controls in the area. Under Alternative A, the deer herd density will continue to increase.

As herd size increases, browsing alters plant community composition. Many authors (Behrend et al. 1970, Alverson et al. 1988, Tilghman 1989, McShea and Rappole 1992, Warren 1998) have reported that vegetative species richness and the abundance of herbaceous and woody vegetation declines in areas where white-tailed deer densities exceed the carrying capacity. The decline is directly attributed to the activities of deer. The loss or reduction of woody understories in forests or lack of forest regeneration decreases availability of habitats for migratory birds and other wildlife. DeCalesta (1994) found that changes in the vegetation due to browsing by high deer densities in Pennsylvania impacted intermediate canopy-nesting songbirds and reduced species richness and abundance.

Studies by the Massachusetts Division of Fisheries and Wildlife (MassWildlife) between 1997 and 1999 found that deer reproduction in eastern Massachusetts is high and that individual animals are long-lived. This, combined with loss of habitat due to land use alteration, local restrictions on use of firearms, and limited opportunities for hunters to access hunting areas has caused deer habitat to be at or near carrying capacity (Woytek, personal communication).

The current deer density in the towns in which Assabet River NWR is located is estimated to be 20-35 animals per square mile. MassWildlife recommends a density of 6-8 animals per square mile to avoid habitat degradation due to over-

browsing. Since 1997, MassWildlife has implemented a longer archery deer season for deer and increased the harvest of antlerless deer in an effort to reach the eight deer per square mile objective (Woytek, personal communication).

Habitat degradation by deer would negatively impact other wildlife that depends on this habitat. Deer hunting would help keep deer within the carrying capacity of their habitat. When the population exceeds the carrying capacity, biological parameters within the herd (weight, antler size, reproductive rates, etc.) indicate the deterioration of the herd quality. Stress factors associated with overpopulation could become acute, causing diseases and high mortality. Browsing pressure will continue to reduce overall habitat quality for deer, stress the health of individual animals, and diminish diversity of habitats that sustain other wildlife species.

There would be no additional impact to migratory game birds, upland game, or big game populations or habitats under this alternative.

b. Socioeconomic Impacts

Under Alternative A, Assabet River NWR would remain closed to all hunting. There would be no socioeconomic benefits to the local economy. Continued loss of opportunities to offer safe hunting on large parcels of public land in an area otherwise lacking large parcels of land will persist under this alternative. Closure of the refuge to hunting would contribute to the unfulfilled demand for hunting and cause the Service to miss opportunities to convey national wildlife refuge messages to the hunting public and build related constituencies. Refuge visitors would not have to share the refuge with hunters, thereby potentially increasing the number of visitors to the refuge.

Increased negative interactions between humans and deer will occur as greater numbers of deer forage on gardens and ornamental plants in residential neighborhoods and on agricultural crops. Incidents of deer-motor vehicle collisions may increase and a larger deer population will raise the deer tick population and the associated transmittal of Lyme disease.

c. Summary of Effects for Alternative A

Alternative A would allow the white-tailed deer population to increase, thereby decreasing habitat quality for songbirds and other wildlife dependent on understory vegetation. Browsing pressure will continue to reduce overall habitat quality for deer and stress the health of individual animals. There could be increased cost to private landowners as a result of vehicle collisions, horticultural damage, or illness from Lyme's disease.

Citizens wishing to engage in hunting of upland game, big game, or migratory game birds for recreational purposes or to harvest game for consumption would be denied that opportunity.

2. Alternative B – The Service’s Proposed Alternative in 2003

a. Biological Impacts

The deer hunt program recommended in Alternative B would help sustain a healthy deer population that is consistent with habitat carrying capacity. Deer browsing would not reach levels that damage understory habitat diversity. Habitat used by ground-nesting and near ground-nesting forest birds will be perpetuated. Human conflicts with deer would also be minimized because the deer herd would not overpopulate the refuge.

Although hunting removes individual birds and mammals, this activity would be controlled through appropriate regulations to ensure that no wildlife populations or species are jeopardized. Resident wildlife populations will not experience significant effects as individuals are free to move on and off refuge property.

There would be an increase in the take of turkey, American woodcock, ruffed grouse, squirrels and Eastern cottontail rabbits if this alternative were implemented. The increase mortality is not expected to be significant or have long-term effects on the populations.

With the exception of the spring turkey hunt, hunting would occur outside the breeding period of most species, thereby avoiding any potential disturbance. No adverse effects on migratory birds, fish, and endangered species as a result of opening a hunt program at Assabet River NWR would occur. Wildlife species for which hunting would be permitted on the refuge are those that are already regulated at the State or Federal level.

b. Socioeconomic Impacts

We anticipate that a low to moderate degree of hunting pressure will occur as a result of opening the refuge to hunting. Under this alternative, hunting at Assabet River NWR would contribute to satisfying local demand for hunting, and provide opportunities for refuge staff to convey Service and refuge messages to hunting enthusiasts and the public. Economic impacts would likely be a minimal increase in the purchase of fuel, food, lodging and supplies, due to the potential for new hunters to be attracted to the area near the refuge. It is anticipated that most hunters would be local hunters, many of whom would hunt in the morning or late afternoon and go to work during the day.

Other actions proposed in the CCP for Assabet River NWR would increase opportunities for wildlife observation, photography, environmental education, hiking and other public uses in parts of the refuge. This, in combination with hunting, may generate conflict among public uses as some potential refuge visitors may be displaced by the hunt program. We know that some visitors are

reluctant to visit the refuge in areas that are open to hunting or during certain hunting seasons. There could be a slight reduction in non-hunter use of the refuge which could result in fewer small purchases for food and fuel. There could be some refuge visitors who would avoid areas open for firearm hunting by concentrating their visits to parts of the refuge that are only open for archery hunting. This could be perceived by some to be a negative impact on their refuge experience. Additionally, some visitors might avoid the refuge altogether and would visit non-refuge lands instead.

Refuge staff will work to anticipate such conflicts, and if any arise, will adjust public use activities to ensure that visitor safety and the interests of all refuge user groups are not unduly compromised.

c. Summary of Effects for Alternative B

Hunting would not affect the refuge goal to maintain, restore, and enhance habitat to support a diversity of plants and animals. Hunting may encourage natural diversity by limiting the growth of the deer population on the refuge, thereby protecting preferred forage species from over-browsing.

No adverse effects on migratory birds, fish, and endangered species are anticipated as a result of establishing an upland game, big game or migratory game hunt program at Assabet River NWR. Wildlife species for which hunting would be permitted on the refuge are those that are already regulated at the State or Federal level.

Hunting noise may disturb refuge visitors or neighbors. There would be some refuge visitors who would alter the times or days they visit the refuge or would avoid the refuge during the hunt season.

As new hunters are attracted to the refuge, opportunities to communicate with the hunting public would increase, thereby fostering greater understanding and support of Assabet River NWR, the National Wildlife Refuge System, and other Service programs. Thus, the hunting program would provide an opportunity to build a more effective constituency base.

Economic impacts would either be negligible or there would be a minimal increase in the purchase of fuel, food, lodging and supplies, due to the potential for new hunters to be attracted to the area near the refuge.

3. Alternative C

a. Biological Impacts

Biological impacts related to hunting under this Alternative would be similar to those under Alternative B, except that the refuge may attract fewer deer hunters as hunting would be limited to archery and primitive firearms only.

The elimination of shotgun deer hunting on refuge lands would result in a decrease in deer mortality. This decrease in mortality may cause a slightly higher deer population in the area as opposed to Alternative B and therefore negatively affect the natural diversity of the plant community.

All other aspects of the hunt program would remain the same as Alternative B.

b. Socioeconomic Impacts

Socioeconomic Impacts of this alternative will be similar to those under Alternative B, but economic benefits to the community would be slightly less as there would be fewer hunters in the area. Disturbance to refuge visitors from noise associated with shotgun hunting would be reduced but there could be an increase in deer-car collisions and other conflicts between deer and people with a slightly larger herd than would be obtained under Alternative B.

c. Summary of Effects for Alternative C

Environmental consequences related to hunting under this alternative would be similar to those under Alternative B, except shotgun hunting would not be allowed for deer. All other aspects of the hunt program would remain the same as Alternative B.

The deer population may remain at a slightly higher level than would be obtained through Alternative B. Potential for hunting-related conflicts would be reduced because fewer hunters would be on the refuge.

4. Alternative D – The *Current Refuge Hunt Program* (Preferred Alternative)

a. Biological Impacts

Under the *Current Refuge Hunt Program*, white-tailed deer, turkey, American woodcock, ruffed grouse, gray squirrel and Eastern cottontail rabbit hunting will be allowed, in accordance with regulations published by MassWildlife and refuge regulations. A refuge permit and fee will be required.

The *Current Refuge Hunt Program* differs from Alternative B in that portions of the refuge will be closed to shotgun hunting for all species and open to archery

only for deer and turkey hunting. The archery only area includes the 290-acre tract south of Hudson Road and the areas on the main part of the refuge that are external to Patrol Road from its southerly intersection with White Pond Road, northwesterly and then easterly, to its intersection with Old Marlborough Road in Maynard. Hunting with firearms is allowed only on portions of the main part of the refuge north of Hudson Road. Migratory bird and upland game hunting would be limited to the portion that is open to firearms. Environmental consequences related to hunting under this alternative would be similar to those under Alternative B, except that there will be a slight reduction in the shotgun hunting opportunity which will minimally decrease biological impacts.

The deer hunt program recommended in Alternative D would help sustain a healthy deer population that is consistent with habitat carrying capacity. Although it is anticipated that less deer will be harvested on the refuge under this alternative, there should still be sufficient reduction in the population so that deer browsing would not reach levels that damage understory habitat diversity. Habitat used by ground-nesting and near ground-nesting forest birds will be perpetuated. Human conflicts with deer would also be avoided because the deer herd would not overpopulate the refuge.

Although hunting removes individual birds and mammals, this activity would be controlled through appropriate regulations to ensure that no wildlife populations or species are jeopardized. Resident wildlife populations will not experience significant effects as individuals are free to move on and off refuge property.

There would be a slight decrease in the take of turkey, American woodcock, ruffed grouse, gray squirrels and Eastern cottontail rabbits if this alternative were implemented. The decrease in mortality is not expected to be significant due to the slight decrease in acreage for hunting woodcock, grouse, squirrels and cottontails and for hunting turkeys with a shotgun.

With the exception of the spring turkey hunt, hunting would occur outside the breeding period of most species, thereby avoiding any potential disturbance. No adverse effects on migratory birds, fish, and endangered species as a result of expanding the hunt program at Assabet River NWR. Impacts from turkey hunters will be minimal due to the limited number of permits that will be issued, the limited hours that can be hunted, and the nature of the hunt itself. Wildlife species for which hunting would be permitted on the refuge are those that are already regulated at the State or Federal level.

b. Socioeconomic Impacts

We anticipate that a low to moderate degree of hunting pressure will occur as a result of opening the refuge to hunting. Under this alternative, hunting at Assabet River NWR would contribute to satisfying local demand for hunting, and provide opportunities for refuge staff to convey Service and refuge messages to hunting

enthusiasts and the public. Economic impacts would likely be a minimal increase in the purchase of fuel, food, lodging and supplies, due to the potential for new hunters to be attracted to the area near the refuge. It is anticipated that most hunters would be local hunters, many of whom would hunt in the morning or late afternoon and go to work during the day.

Other actions proposed in the CCP for Assabet River NWR would increase opportunities for wildlife observation, photography, environmental education, hiking and other public uses in parts of the refuge. This, in combination with hunting, may generate some conflict among public uses as some potential refuge visitors may feel displaced by the hunt program. Some visitors may be reluctant to visit the refuge in areas that are open to hunting or during certain hunting seasons. There would be some refuge visitors who would avoid areas open for firearm hunting by concentrating their visits to parts of the refuge that are only open for archery hunting. This could be perceived by some to be a negative impact on their refuge experience. Additionally, some visitors might avoid the refuge altogether and would visit non-refuge lands instead. It is possible that there would be a slight reduction in non-hunter use of the refuge which would result in fewer small purchases for food and fuel.

Areas of the refuge that are next to residential areas will be open for archery deer and turkey hunting only. This will decrease noise and should decrease concerns about safety that have been expressed by some neighbors.

Refuge staff will work to anticipate such conflicts, and if any arise, will adjust public use activities to ensure that visitor safety and the interests of all refuge user groups are not unduly compromised.

c. Summary of Effects of Alternative D

Hunting would not affect the refuge goal to maintain, restore, and enhance habitat to support a diversity of plants and animals. Hunting may encourage natural diversity by limiting the growth of the deer population on the refuge, thereby protecting preferred forage species from over-browsing.

No adverse effects on migratory birds, fish, and endangered species are anticipated as a result of establishing an upland game, big game or migratory game hunt program at Assabet River NWR. Wildlife species for which hunting would be permitted on the refuge are those that are already regulated at the State or Federal level.

Hunting noise may disturb refuge visitors or neighbors, although that noise is reduced in this alternative by the extensive archery only areas that are located next to most residential areas. There would be some refuge visitors who would avoid areas open for hunting by altering the times or days they visit the refuge or by visiting other non-refuge lands.

As new hunters are attracted to the refuge, opportunities to communicate with the hunting public would increase, thereby fostering greater understanding and support of Assabet River NWR, the National Wildlife Refuge System, and other Service programs. Thus, the hunting program would provide an opportunity to build a more effective constituency base.

Economic impacts would either be negligible or there would be a minimal increase in the purchase of fuel, food, lodging and supplies, due to the potential for new hunters to be attracted to the area near the refuge.

C. Cumulative Impacts Analysis

1. Anticipated Direct and Indirect Impacts of the Proposed Hunt on Wildlife Species

a. Resident Wildlife - White-tailed Deer

Alternative A – Current Management in 2003

Deer harvest is essential to help maintain the deer herd at or below habitat carrying capacity as well as below the human tolerance level where once exceeded, deer become pests. When deer are overpopulated, they over-browse their habitat and can completely change the species composition of a forest by doing so. Furthermore, overpopulation leads to starvation, decreased herd health, increased car-deer collisions, increased property damage and Lyme disease.

Under this alternative, no deer hunting would occur at Assabet River NWR, thus increasing the probability of deer deaths due to other means such as noted in the paragraph above. Disturbance to non-hunted species would not exist under this alternative as the refuge would remain closed to the public.

The cumulative effect of not opening a refuge hunt program could result in a decline of financial and social support for wildlife conservation. As of today, hunters and anglers are the only people engaged in wildlife-dependent recreation who pay fees to engage in their sport. Through the purchases of hunting licenses, and taxed levied on the purchase of hunting equipment, funds are provided to the Service and then disseminated to state fish and wildlife agencies for the acquisition, restoration and management of wildlife conservation lands. These habitat projects benefit all species of wildlife, including white-tailed deer and non-hunted wildlife. The cumulative effect of closing the refuge to hunting may be reduced conservation of wildlife habitats if the above revenues are not replaced by another funding source.

Alternative B – The Service’s Proposed Alternative in 2003

The impacts of this alternative would be similar to those of Alternative D, the *Current Refuge Hunt Program*. Because this alternative opened a larger area of

the refuge to shotgun hunting, additional deer mortality would occur. This additional mortality would further reduce the number of conflicts between deer and people and help to bring the local deer density closer to the Zone 10 goal of 6-8 deer per square mile.

Impacts to non-hunted wildlife species under this alternative would be similar to that described under Alternative D. See text under Alternative D for more information.

Alternative C

The impacts of this alternative would be similar to those of Alternative D, the *Current Refuge Hunt Program*. Because this alternative excludes shotgun hunting less mortality would occur. This reduction in mortality would have minimal impacts on the State's goal of bringing deer density down to 6-8 deer per square mile.

Impacts to non-hunted wildlife species under this alternative would be similar to that described under Alternative D. See text under Alternative D for more information.

Alternative D – *The Current Refuge Hunt Program* (Preferred Alternative)

Hunting seasons, bag limits, and antlerless deer permits are adjusted by state biologists in order to control deer density. Since deer population growth rates can exceed 30 percent per year, a proactive approach in maintaining deer density through hunting provides the opportunity to avoid overpopulation effects.

Deer harvest is essential to help maintain the herd at or below habitat carrying capacity as well as below the human tolerance level where once exceeded, deer become pests. When deer are overpopulated, they over-browse their habitat and can completely change the species composition of a forest by doing so.

Furthermore, overpopulation leads to starvation, decreased herd health, increased car-deer collisions, increased property damage and Lyme disease.

According to public information obtained from the website of MassWildlife, there are currently between 85,000 and 95,000 deer in Massachusetts. Densities of deer per square mile range from approximately 10 in the northwestern part of the state to approximately 55 on Nantucket Island.

Assabet River NWR is located within State Wildlife Management Zone 10, which has a current deer density of 20-35 per square mile. Because State biologists have set a goal of attaining 6-8 deer per square mile in this zone to maintain deer health, some additional reduction in the deer population is warranted. This reduction will help to reduce the number of conflicts between deer and people including the number of car-deer collisions.

Deer hunting does not have regional population impacts due to restricted home ranges; only local impacts occur. MassWildlife has recorded deer harvest rates of approximately 23 deer per season on lands adjacent to Assabet River NWR from 1999-2004 (Woytek, personal communication). During the 2005 deer season, 70 deer permits were issued on the refuge. It is estimated that a total of 35 deer were harvested from the refuge during the season. In 2006, 50 archery, 30 muzzleloader and 60 shotguns permits were allotted. It is estimated that 33 deer were harvested from the refuge. These numbers are only slightly higher than the average take of deer in the area before hunting began on the refuge in 2005.

Harvest data confirm that decades of deer hunting on surrounding lands has not had a local cumulative adverse effect on the deer population. In fact, the State would like more lands opened to hunting in Zone 10 to aid in the reduction of deer populations. Much of the land in Zone 10 has hunting restrictions on it (Woytek, personal communication). Therefore, expanding hunting on 2,230 acres of refuge lands should aid the State in reaching their goals of limiting the deer herd in this suburban area. This reduction will help to reduce the number of conflicts between deer and people including the number of car-deer collisions.

Non-hunted wildlife on the refuge includes songbirds, wading birds, raptors, and woodpeckers; small mammals such as voles, moles, mice, shrews, and bats; larger mammals such as fisher, otter, and mink; reptiles and amphibians such as snakes, turtles, lizards, salamanders, frogs and toads; and invertebrates such as butterflies, moths, insects and spiders. Except for migratory birds, these species have very limited home ranges and hunting could not possibly affect their populations regionally; thus, only local effects will be discussed.

Disturbance by hunting to non-hunted wildlife would be the most likely negative cumulative impact. However, disturbance would be unlikely for the following reasons. Small mammals, including bats, are inactive during winter when hunting season occurs. These species are also nocturnal. Both of these qualities make hunter interactions with small mammals extremely rare. Hibernation or torpor by cold-blooded reptiles and amphibians also limits their activity during the hunting season when temperatures are low. Hunters will rarely encounter reptiles and amphibians during most of the hunting season. Encounters with reptiles and amphibians in the early fall are few and should not have cumulative negative effects on reptile and amphibian populations. Invertebrates are also not active during cold weather and will have few interactions with hunters during the hunting season. Spring turkey hunters will avoid wetlands and vernal pools where salamanders and frogs will be breeding.

Disturbance to non-hunted migratory birds, resident birds, such as most woodpeckers and some songbirds such as cardinals, titmice, wrens, and chickadees, would be minimal. Regional and flyway effects would not be applicable to species that do not migrate. Disturbance by hunting to non-hunted migratory birds should not have cumulative negative impacts for the following

reasons. Deer hunting season does not coincide with the nesting season. Long-term future impacts that could occur if reproduction was reduced by hunting are not relevant for this reason. Disturbance to the daily wintering activities, such as feeding and resting, of birds may occur. Disturbance to birds by hunters is probably commensurate with that caused by non-consumptive users.

Summary Statement on Anticipated Direct and Indirect Impacts to Resident Wildlife - White-Tailed Deer

The cumulative effects to the white-tailed deer population will be increased mortality to individual deer, but an overall increase in the long-term health of the deer population due to increased ability of the refuge to maintain carrying capacity for the deer that use the refuge. This will benefit species that rest and feed in vegetation eaten by deer. Impacts to non-hunted resident wildlife will be minimal.

b. Resident Wildlife - Turkey

Alternative A – Current Management in 2003

Under this alternative the refuge would remain closed to hunting. No impacts to the turkey population would be anticipated. Disturbance to non-hunted species would not exist under this alternative as the refuge would remain closed to the public.

The cumulative effect of not opening a refuge hunt program could result in a decline of financial and social support for wildlife conservation. As of today, hunters and anglers are the only people engaged in wildlife-dependent recreation who pay fees to engage in their sport. Through the purchases of hunting licenses and taxes levied on the purchase of hunting equipment, funds are provided to the Service and then disseminated to state fish and wildlife agencies for the acquisition, restoration and management of wildlife conservation lands. These habitat projects benefit all species of wildlife, including turkey and non-hunted wildlife. The cumulative effect of closing the refuge to hunting may be reduced conservation of wildlife habitats if the above revenues are not replaced by another funding source.

Alternative B – The Service's Proposed Alternative in 2003

Under this alternative, cumulative impacts would be similar to those experienced under Alternative D, the *Current Refuge Hunt Program*. The difference between Alternative B and the *Current Refuge Hunt Program* is that some of the hunt area would be limited to archery only instead of both archery and shotgun. This would reduce the turkey mortality but only slightly. Since so few hunters are successful at taking turkey, there would be no impact on the local population. Impacts to

non-hunted species would be similar to those that occur under the *Current Refuge Hunt Program*.

Alternative C

There is no difference in regard to turkey hunting between Alternative C and Alternative B above. See the text under Alternative B for cumulative impacts of Alternative C.

Alternative D – The *Current Refuge Hunt Program* (Preferred Alternative)

The fall turkey population in Massachusetts is estimated at approximately 18,000 birds (Cardoza, personal communication). During the mid-1800's turkeys were rare in the state. The last native bird was taken in 1851, but through an active reintroduction program and natural movements of turkeys into Massachusetts from adjacent states, the turkey population has rebounded. Restoration resulted in a huntable population level by 1980. Today, turkeys range throughout most of the state and hunting occurs in all but two counties.

Turkeys are non-migratory and have a small home range, therefore hunting only impacts the local population. Turkey hunting is limited to a spring hunt with a maximum take of two bearded birds per hunter. According to state biologists, gobblers can be taken during the spring without adversely affecting turkey production.

Statewide, 2,266 turkeys were harvested in the spring 2006 hunt and 163 turkeys harvested in the fall. The average take for 2000-2006 in Middlesex County was 72 birds, including both spring and fall seasons, which is approximately 22% of the statewide harvest and 0.4% of the total turkey population. (The refuge is in Zone 10, which does not allow a fall turkey hunt, but other towns within Middlesex County are located in Zone 9, which does allow a fall hunt.) The average take of turkeys per season for the four towns surrounding the refuge from 2003-2006 was 10 turkeys per year. Ten permits were issued for the spring turkey hunt at Assabet River NWR. The maximum total take for turkeys on the refuge is 20 gobblers. It is estimated that only one in fifteen hunters are successful at taking a turkey which would reduce the take to approximately 1 turkey per year on the refuge. This number is well below the threshold that would negatively impact the local population.

The population of turkeys in Massachusetts is considered stable in most of the state and increasing in the Southeast portion of the state where there is vacant habitat (Cardoza, personal communication). Each summer, state biologists conduct brood counts to estimate the poult production and survival rates. These data indicate that hunting has not had a negative effect on the local population of turkeys even after 25 years of hunting pressure.

Disturbance to non-hunted species including birds, reptiles, amphibians, small mammals and invertebrates will occur during the spring turkey hunt but is expected to be minimal. We expect to issue 10 – 20 permits for turkey hunting on the refuge. The restricted number of turkey hunters allowed on the refuge and the limited movements of turkey hunters while hunting limit the amount of disturbance to these species. Long-term future impacts that could occur if reproduction was reduced by hunting are not relevant for this reason. Disturbance to the daily activities, such as feeding, resting and nesting, of birds may occur. Disturbance to reptiles, amphibians, and small mammals will be minimal since hunter interaction is expected to be rare. Disturbance to birds, reptiles, amphibians, small mammals and invertebrates by hunters is probably commensurate with that caused by non-consumptive users.

Summary Statement on Anticipated Direct and Indirect Impacts to Resident Wildlife - Turkey

The cumulative effects to the turkey population will be increased individual mortality, but the number of turkeys likely to be harvested from the refuge is and will remain small due to limits in the number of permits issued and the average success rate for turkey hunters. Providing hunt opportunities on the refuge for turkey hunting will not result in cumulative impacts to the local, regional or statewide population.

c. Resident Wildlife - Small Game (Gray Squirrel and Eastern Cottontail Rabbit)

Alternative A – Current Management in 2003

Under this alternative the refuge would remain closed to hunting. No impacts to squirrel or rabbit populations are anticipated. Disturbance to non-hunted species would not exist under this alternative as the refuge would remain closed to the public.

The cumulative effect of not opening a refuge hunt program could result in a decline of financial and social support for wildlife conservation. As of today, hunters and anglers are the only people engaged in wildlife-dependent recreation who pay fees to engage in their sport. Through the purchases of hunting licenses and migratory bird conservation stamps, and taxes levied on the purchase of hunting equipment, funds are provided to the Service and then disseminated to state fish and wildlife agencies for the acquisition, restoration and management of wildlife conservation lands. These habitat projects benefit all species of wildlife, including non-hunted wildlife. The cumulative effect of closing the refuge to hunting may be reduced conservation of wildlife habitats if the above revenues are not replaced by another funding source.

Alternative B – The Service’s Proposed Alternative in 2003

Impacts to squirrels and Eastern cottontail rabbits under this alternative will be similar to Alternative D. Impacts are slightly greater under this alternative because upland game hunting would be allowed on most of the 290-acre part of the refuge located south of Hudson Road. However, the difference in the amount of land open to upland game hunting between these alternatives is so small, that cumulative impacts would be the same for both alternatives.

Alternative C

There is no difference in regard to squirrel and rabbit hunting between Alternative C and Alternative B above.

Alternative D – *The Current Refuge Hunt Program* (Preferred Alternative)

Squirrels and rabbits will not be affected regionally by refuge hunting because of their limited home ranges. Only local effects will be discussed. There is little study of cumulative effects of hunting on gray squirrel and cottontail rabbits in Massachusetts. Studies have been conducted in other areas including Louisiana to determine the effects of hunting on the population dynamics of small game. Results from studies have consistently shown that small game, such as rabbits and squirrels, are not affected by hunting, but rather are limited by food resources. Gray squirrels and Eastern cottontail rabbits are prolific breeders and their populations have never been threatened by hunting in Massachusetts, even prior to the passing of hunting regulations as we know them today. The refuge does not have extensive areas of prime squirrel and rabbit habitat, and the population of these species is not high.

In 2005, the refuge issued 171 upland game permits (squirrel, rabbit, and ruffed grouse). This was the first year the refuge was open to hunting, and interest in securing permits was high. In 2006, the refuge issued 44 upland game permits. The dramatic drop in the number of permits reflects general hunter awareness that the amount of suitable habitat on the refuge for squirrel and rabbit is small at the present time. Most upland game hunters will continue to hunt off-refuge. We anticipate that in 2007, we will again issue about 40 permits for upland game hunting. This probably reflects the local interest in hunting these species.

We received feedback from 20 of the 44 hunters who received upland game permits for Assabet River NWR in 2006. Of these, only 1 hunter reported hunting squirrel. He did this for 1 day only, and he harvested no game. Five hunters reported that they hunted rabbit on the refuge. Only one of these hunters spent more than two days engaged in rabbit hunting. Most hunters hunted rabbit while they were also hunting grouse. We received no reports of rabbit being harvested in 2006. We received limited feedback from hunters in 2005 with a reported total of 9 squirrels and 0 rabbits taken then. Few hunters spend much time on squirrel

or rabbit hunting. Among the upland game species, the target of choice appears to be ruffed grouse (see below).

Disturbance to non-hunted migratory birds would not have regional, local, and flyway effects. Regional and flyway effects would not be applicable to species that do not migrate such as most woodpeckers, and some songbirds such as cardinals, titmice, wrens, chickadees, etc. Disturbance by hunting to non-hunted migratory birds should not have cumulative negative impacts since the hunt season does not coincide with the nesting season.

Disturbance by hunting to non-hunted resident wildlife would be the most likely negative cumulative impact. There could be some disturbance to small, non-hunted animals from dogs used by hunters to retrieve or locate game species. This disturbance is incidental to the hunt and will be temporary in nature. Hunt dogs are highly trained and remain focused on their game. There may be some avoidance behavior exhibited by non-hunted small mammals, but these animals will not be the target of the hunt dogs' search, so the impacts will be minimal. There will be no cumulative impact on non-hunted wildlife by hunt dogs.

Significant disturbance would be unlikely for the following reasons. Small mammals, including bats, are inactive during winter when the majority of hunting occurs. These species, as well as some larger species such as mink, are nocturnal. Fisher, otter and fox are active during hunt periods, but all are secretive. Hunters are more likely to see signs from these animals rather than the animals themselves. Interactions, if and when they occur, would be brief and have a temporary impact. Both of these qualities make hunter interactions with small mammals extremely rare. Hibernation or torpor by cold-blood reptiles and amphibians also limits their activity during the hunting season when temperatures low. Hunters will rarely encounter reptiles and amphibians during most of the hunting season. Encounters with reptiles and amphibians in the early fall are few and should not have cumulative negative effects on reptile and amphibian populations. Invertebrates are also not active during cold weather and will have few interactions with hunters during the hunting season.

Summary Statement on Anticipated Direct and Indirect Impacts to Resident Wildlife – Squirrel and Rabbit

The cumulative effects to squirrels and rabbits will be increased individual mortality, but the number of animals likely to be harvested from the refuge is very low and will likely remain low due to lack of abundant habitat and declines in the number of hunters who harvest these game species. Population studies indicate that hunting is not the limiting factor for squirrels and rabbit populations. Providing hunt opportunities for squirrel and rabbit hunting will not result in cumulative impacts to the local, regional or statewide population.

d. Resident Wildlife -Grouse

Alternative A – Current Management in 2003

Under this alternative the refuge would remain closed to hunting. No impacts to grouse populations are anticipated. Disturbance to non-hunted species would not exist under this alternative as the refuge would remain closed to the public.

The cumulative effect of not opening a refuge hunt program could result in a decline of financial and social support for wildlife conservation. As of today, hunters and anglers are the only people engaged in wildlife-dependent recreation who pay fees to engage in their sport. Through the purchases of hunting licenses and taxes levied on the purchase of hunting equipment, funds are provided to the Service and then disseminated to state fish and wildlife agencies for the acquisition, restoration and management of wildlife conservation lands. These habitat projects benefit all species of wildlife, including ruffed grouse and non-hunted wildlife. The cumulative effect of closing the refuge to hunting may be reduced conservation of wildlife habitats if the above revenues are not replaced by another funding source.

Alternative B – The Service’s Proposed Alternative in 2003

The impacts under this alternative are similar to Alternative D. Impacts are slightly greater under this alternative because ruffed grouse hunting would be allowed on most of the 290-acre part of the refuge located south of Hudson Road. However, the difference in the amount of land open to upland game hunting between these alternatives is so small, that cumulative impacts would be the same for both alternatives.

Alternative C

There is no difference in regard to grouse hunting between Alternative C and Alternative D, except that less acreage is open to ruffed grouse hunting in Alternative D. See the text under Alternative D for cumulative impacts of Alternative C.

Alternative D – The *Current Refuge Hunt Program* (Preferred Alternative)

Ruffed grouse are non-migratory and therefore are not regionally affected by hunting. Only local effects will be discussed. According to the MassWildlife website, ruffed grouse have declined 4% over the past three decades. Lack of suitable early succession habitat is believed to be the cause of the decline. A study of ruffed grouse ecology and management in the Appalachian Region found that hunting is not a limiting factor for ruffed grouse populations (Appalachian Cooperative Grouse Research Project, 2004).

Approximately 10 years ago Massachusetts decreased the season on grouse. To date, there has been no noticeable change in the population (John Sklenak, personal communication). Today, the state is working towards increasing suitable habitat through partnerships with private landowners. Assabet River NWR provides limited grouse habitat so hunting opportunities will be minimal.

In 2005, the refuge issued 171 upland game permits (squirrel, rabbit, and ruffed grouse). This was the first year the refuge was open to hunting, and interest in securing permits was high. In 2006, the refuge issued 44 upland game permits. The dramatic drop in the number of permits reflects general hunter awareness that the amount of suitable habitat on the refuge for ruffed grouse is small at the present time. Most upland game hunters will continue to hunt off-refuge. We anticipate that in 2007, we will again issue about 40 permits for upland game hunting. This probably reflects the local interest in hunting these species.

We received feedback from 20 of the 44 hunters who received upland game permits for Assabet River NWR in 2006. Of these, a majority sited ruffed grouse as their target species. Seven hunters reported that they hunted grouse on the refuge; several did not hunt due to injuries or other commitments, but if they had, they would have been hunting grouse. Only two of these hunters spent more than two days engaged in ruffed grouse hunting. None of the 20 hunters we received feedback from harvested grouse from the refuge, although several did flush grouse. We know at least 3 hunters spent time on the refuge in 2005 hunting grouse, and we know that 1 grouse was harvested.

Disturbance to non-hunted migratory birds would not have regional, local, and flyway effects. Regional and flyway effects would not be applicable to species that do not migrate such as most woodpeckers, and some songbirds such as cardinals, titmice, wrens, chickadees, etc. Disturbance by hunting to non-hunted migratory birds should not have cumulative negative impacts since the hunt season does not coincide with the nesting season.

Disturbance by hunting to non-hunted resident wildlife would be the most likely negative cumulative impact. However, disturbance would be unlikely for the following reasons. Small mammals, including bats, are inactive during winter when the majority of hunting occurs. These species, as well as some larger species such as mink, are nocturnal. Fisher, otter and fox are active during hunt periods, but all are secretive. Hunters are more likely to see signs from these animals rather than the animals themselves. Interactions, if and when they occur, would be brief and have a temporary impact. Both of these qualities make hunter interactions with small mammals extremely rare. Hibernation or torpor by cold-blood reptiles and amphibians also limits their activity during the hunting season when temperatures low. Hunters will rarely encounter reptiles and amphibians during most of the hunting season. Encounters with reptiles and amphibians in the early fall are few and should not have cumulative negative effects on reptile

and amphibian populations. Invertebrates are also not active during cold weather and will have few interactions with hunters during the hunting season.

Dogs used by grouse hunters may flush or disturb non-hunted wildlife, but they are well trained and focused on their prey. Disturbance to non-hunted wildlife will be temporary and minor. Additionally, the number of individuals who hunt grouse on the refuge is small, thereby further reducing impacts to non-hunted species.

Summary Statement on Anticipated Direct and Indirect Impacts to Resident Wildlife – Ruffed Grouse

The cumulative effects to ruffed grouse will be increased individual mortality, but the number of animals harvested from the refuge is low and will likely remain small due to limited habitat and declines in the number of hunters who harvest this species. This is also not an abundant species on the refuge, and serious hunters will pursue this activity at other locations. Studies indicate that hunting is not the limiting factor for grouse populations, but rather the lack of suitable habitat. Providing hunting opportunities for ruffed grouse will have no cumulative impacts to the local, regional or statewide population.

e. Migratory Species

Alternative A – Current Management in 2003

Woodcock hunting would not be permitted under this alternative and, therefore, additional mortality of woodcock would not occur. Disturbance to non-hunted species would not exist under this alternative as the refuge would remain closed to the public.

The cumulative effect of not opening a refuge hunt program could result in a decline of financial and social support for wildlife conservation. As of today, hunters and anglers are the only people engaged in wildlife-dependent recreation who pay fees to engage in their sport. Through the purchases of hunting licenses and migratory bird conservation stamps, and taxes levied on the purchase of hunting equipment, funds are provided to the Service and then disseminated to state fish and wildlife agencies for the acquisition, restoration and management of wildlife conservation lands. These habitat projects benefit all species of wildlife, including migratory birds and non-hunted wildlife. The cumulative effect of closing the refuge to hunting may be reduced conservation of wildlife habitats if the above revenues are not replaced by another funding source.

Alternative B – The Service’s Proposed Alternative in 2003

There is little difference between Alternative B and Alternative D, the *Current Refuge Hunt Program*. There might be a slight increase in the take of woodcock

in this alternative because a majority of the 290-acre parcel south of Hudson Road would be open to woodcock hunting in Alternative B. However, due to the small number of woodcock hunters on the refuge and the small amount of additional land available for hunting, there would be no difference in the cumulative impacts. See the text under Alternative D for cumulative impacts of this alternative.

Alternative C

There is no difference between Alternative B and Alternative C. See the text under Alternative B for cumulative impacts of Alternative C.

Alternative D – The *Current Refuge Hunt Program* (Preferred Alternative)

The Service annually prescribes frameworks, or outer limits, for dates and times when hunting may occur as well as for the number of birds that may be taken and possessed. These frameworks are necessary to allow State selections of hunt seasons and take limits for recreation and sustenance; aid Federal, State, and tribal governments in the management of migratory game birds; and permit harvests at levels compatible with population status and habitat conditions. Because the Migratory Bird Treaty Act stipulates that all hunting seasons for migratory game birds are closed unless specifically opened by the Secretary of the Interior, the Service annually promulgates regulations (50 CFR Part 20) establishing the frameworks from which States may select season dates, bag limits, shooting hours, and other options for each migratory bird hunting season. The frameworks are essentially permissive in that hunting of migratory birds would not be permitted without them. Thus, in effect, Federal annual regulations both allow and limit the hunting of migratory birds.

Migratory game birds are those bird species so designated in conventions between the United States and several foreign nations for the protection and management of those birds. Under the Migratory Bird Treaty Act (16 U.S.C. 703-712), the Secretary of the Interior is authorized to determine when “hunting, taking capture, killing, possession, sale, purchase, shipment, transportation, carriage, or export of any ... bird, or any part, nest, or egg” of migratory game birds can take place, and to adopt regulations for this purpose. These regulations are written after giving due regard to “the zones of temperature and to the distribution, abundance, economic value, breeding habits, and times and lines of migratory flight of such birds, and are updated annually (16 U.S.C. 704(a)). This responsibility has been delegated to the U.S. Fish and Wildlife Service as the lead federal agency for managing and conserving migratory birds in the United States. Acknowledging regional differences in hunting conditions, the Service has administratively divided the nation into four Flyways for the primary purpose of managing migratory game birds. Each Flyway (Atlantic, Mississippi, Central, and Pacific) has a Flyway Council, a formal organization generally composed of one member

from each State and Province in that Flyway. Assabet River NWR is within the Atlantic Flyway.

The process for adopting migratory game bird hunting regulations, located in 50 CFR Part 20, is constrained by three primary factors. Legal and administrative considerations dictate how long the rule making process will last. Most importantly, however, the biological cycle of migratory game birds controls the timing of data-gathering activities and thus the dates on which these results are available for consideration and deliberation. The process of adopting migratory game bird hunting regulations includes two separate regulations-development schedules, based on “early” and “late” hunting season regulations. Early hunting seasons pertain to all migratory game bird species in Alaska, Hawaii, Puerto Rico, and the Virgin Islands; migratory game birds other than waterfowl (e.g. dove, woodcock, etc.); and special early waterfowl seasons, such as teal or resident Canada geese. Early hunting seasons generally begin prior to October 1. Late hunting seasons generally start on or after October 1 and include most waterfowl seasons not already established. There are basically no differences in the processes for establishing either early or late hunting seasons. For each cycle, Service biologists and others gather, analyze, and interpret biological survey data and provide this information to all those involved in the process through a series of published status reports and presentations to Flyway Councils and other interested parties (USFWS 2006).

Because the Service is required to take abundance of migratory birds and other factors into consideration, the Service undertakes a number of surveys throughout the year in conjunction with the Canadian Wildlife Service, State and Provincial wildlife-management agencies, and others. To determine the appropriate frameworks for each species, we consider factors such as population size and trend, geographical distribution, annual breeding effort, the condition of breeding and wintering habitat, the number of hunters, and the anticipated harvest. After frameworks are established for season lengths, bag limits, and areas for migratory game bird hunting, migratory game bird management becomes a cooperative effort of State and Federal governments. After Service establishment of final frameworks for hunting seasons, the States may select season dates, bag limits, and other regulatory options for the hunting seasons. States may always be more conservative in their selections than the Federal frameworks but never more liberal. Season dates and bag limits for National Wildlife Refuges open to hunting are never longer or larger than the State regulations. In fact, based upon the findings of an environmental assessment developed when a National Wildlife Refuge opens a new hunting activity, season dates and bag limits may be more restrictive than the State allows. Any cumulative impacts that may occur on national wildlife refuges in Massachusetts have already been considered by the Service during the setting of the annual hunt season frameworks.

American woodcock are managed on the basis of two regions or populations, Eastern and Central, as recommended by Owen et al. (1977). The number of

woodcock heard displaying during the 2006 singing ground survey in the Eastern Region was not significantly different from 2005 levels. In Massachusetts, numbers of woodcock heard singing in 2006 were 1.9 percent above the 10 year average (Kelley and Rau 2006).

American woodcock are the only migratory birds currently allowed to be hunted at Assabet River NWR. Under the proposed action, refuge staff members estimate that no more than 40 woodcock are harvested each year, based upon the average hunter success of 2 woodcock per hunt and 9.2 woodcock per hunting season (Kelley and Rau 2006). This harvest impact represents 1.7% of Massachusetts' average harvest of approximately 2,300. While these numbers are supportable estimates, we believe these numbers to be high. Based on interviews with hunters, hunter feedback, and file observations, we believe these numbers are over-estimated. In 2005, four hunters provided feedback. Among the four hunters, no woodcock were harvested.

McAuley et al. (2005) studied the effect of hunting on survival of American woodcock in the Northeast. Their results suggest that hunting under the current regulatory frameworks is not causing the woodcock population to decline.

Although some woodcock harvest occurs during the hunt, the numbers taken will not adversely affect refuge purposes or State or Atlantic Flyway populations. Refuge staff believes that woodcock hunting at Assabet River NWR will have little or no effect on non-hunted resident and migratory species. The area open to American woodcock hunting is only the part of the refuge located north of Hudson Road (1,400 acres). Hunting season does not overlap with the nesting season for non-hunted migratory birds and therefore, long-term future impacts are not likely.

NEPA considerations by the Service for hunted migratory game bird species are addressed by the programmatic document, "Final Supplemental Environmental Impact Statement: Issuance of Annual Regulations Permitting the Sport Hunting of Migratory Birds (FSES 88-14)," filed with the Environmental Protection Agency on June 9, 1988. Notice of Availability was published in the Federal Register on June 16, 1988 (53 FR 22582), and the Record of Decision was published on August 18, 1988 (53 FR 31341). Annual NEPA considerations for waterfowl hunting frameworks are covered under a separate Environmental Assessment, "Duck Hunting Regulations for 2006-07," and on August 24, 2006, Finding of No Significant Impact. Further, in a notice published in the September 8, 2005, Federal Register (70 FR 53376), the Service announced its intent to develop a new Supplemental Environmental Impact Statement for the migratory bird hunting program. Public scoping meetings were held in the spring of 2006, as announced in a March 9, 2006, Federal Register notice (71 FR 12216). More information may be obtained from: Chief, Division of Migratory Bird Management, U.S. Fish and Wildlife Service, Department of the Interior, MS MBSP-4107-ARLSQ, 1849 C Street, NWR, Washington, D.C. 20240.

Summary Statement on Anticipated Direct and Indirect Impacts to Resident Wildlife – Migratory Birds

While there will be individual mortality to woodcock, the cumulative effects to local, regional, statewide and national populations are minimal. These species are highly regulated at the Federal and State level. Hunters who receive a refuge permit must also receive a permit from the State. There is no additional cumulative impact as a result of the establishment of a woodcock hunt. If hunt opportunities were not available on the refuge, hunters would go to other areas where hunting opportunities exist.

f. Endangered Species

Alternative A – Current Management in 2003

With the exception of occasional (most likely wintering) bald eagles, no Federal listed threatened or endangered species are currently known from the Assabet River NWR. A small number of New England Blazing Stars (a Federal Candidate Species in 1992) were recorded in 1992, but were not found by the New England Wildflower Society during a 1999 re-survey for the Massachusetts Natural Heritage and Endangered Species Program. Under Alternative A there would be no negative cumulative impacts and no impacts to non-hunted species as the refuge would remain closed to the public.

Alternative B – The Service’s Proposed Alternative in 2003

With the exception of occasional (most likely wintering) bald eagles, no Federally listed threatened or endangered species are currently known from the Assabet River NWR. A small number of New England Blazing Stars (a Federal Candidate Species in 1992) were recorded in 1992, but were not found by the New England Wildflower Society during a 1999 re-survey for the Massachusetts Natural Heritage and Endangered Species Program. A Section 7 Evaluation associated with the refuge hunting program was conducted, and it was determined that the proposed action was not likely to adversely affect these bald eagle populations (U.S. Fish and Wildlife Service 2005b).

Alternative C

With the exception of occasional (most likely wintering) bald eagles, no Federally- listed threatened or endangered species are currently known from the Assabet River NWR. A small number of New England Blazing Stars (a Federal Candidate Species in 1992) were recorded in 1992, but were not found by the New England Wildflower Society during a 1999 re-survey for the Massachusetts Natural Heritage and Endangered Species Program. A Section 7 Evaluation associated with the refuge hunting program was conducted, and it was determined

that the proposed action was not likely to adversely affect these bald eagle populations (U.S. Fish and Wildlife Service 2005b).

Alternative D – The *Current Refuge Hunt Program* (Preferred Alternative)

With the exception of occasional (most likely wintering) bald eagles, no Federally- listed threatened or endangered species are currently known from the Assabet River NWR. A small number of New England Blazing Stars (a Federal Candidate Species in 1992) were recorded in 1992, but were not found by the New England Wildflower Society during a 1999 re-survey for the Massachusetts Natural Heritage and Endangered Species Program. A Section 7 Evaluation associated with the refuge hunting program was conducted, and it was determined that the proposed action was not likely to adversely affect these bald eagle populations (U.S. Fish and Wildlife Service 2005b).

Summary Statement on Anticipated Direct and Indirect Impacts to Resident Wildlife – Endangered Species

There will be no cumulative impact to Federally-listed endangered or threatened species.

2. Anticipated Direct and Indirect Impacts of the Proposed Action on Refuge Programs, Facilities, and Cultural Resources.
 - a. Other Wildlife-Dependent Recreation

Alternative A – Current Management in 2003

The public would not have the opportunity to harvest a renewable resource, participate in wildlife-dependent recreation that is compatible with the purposes for which the refuge was established, attain an increased awareness of Assabet River NWR and the National Wildlife Refuge System; nor would the Service be addressing demand for this activity. Continued loss of opportunities to offer safe hunting on large parcels of public land in an area where few large parcels of land are available would persist.

Refuge visitation could potentially drop on a seasonal basis due to increases in the sheer numbers of deer ticks whose presence was attributed to a burgeoning deer population. Refuge visitors, concerned about the prospect of obtaining Lyme disease, would be less inclined to engage in wildlife-dependent recreational programs such as fishing, wildlife observation, wildlife photography, interpretation and/or environmental education programs.

Non-hunters would feel free to enjoy other wildlife-dependent recreational activities without concerns related to hunting conflicts. These positive impacts

would be most apparent on parts of the refuge that offer abundant wildlife observation and photography, environmental education and interpretation.

This alternative does not support the vision and management direction outlined in the Assabet River NWR CCP, specifically Goal 3, which seeks to build a public that understands, appreciates, and supports refuge goals for wildlife by providing opportunities for hunting where appropriate and compatible with refuge purposes (Objective 4).

Alternative B – The Service’s Proposed Alternative in 2003

Opening portions of Assabet River NWR to white-tailed deer hunting, turkey, woodcock, ruffed grouse, Eastern cottontail rabbit and gray squirrel would allow greater opportunities for the public to harvest a renewable resource. The refuge would be promoting a wildlife-dependent recreational opportunity that is compatible with the purposes for which the refuge was established. Public awareness of Assabet River NWR and the National Wildlife Refuge System would have increased. In addition, some public demand for more local hunting activities would be met. This alternative would allow the public to enjoy hunting at an affordable rate in a region where private land and public land is often closed for hunting.

Visitor activities such as wildlife observation and wildlife photography that occur in hunt areas may be curtailed, particularly during two-week shotgun deer season. There are currently twelve miles of unnamed nature trails at Assabet River NWR. Visitors on these trails may hear gunshot or may encounter hunters. Upland game (ruffed grouse, Eastern cottontail rabbit, squirrel), turkey, deer and woodcock hunting have occurred at the refuge for the past two years without conflict with non-hunters. It is known that some visitors avoid the refuge during shotgun season.

The Assabet River NWR CCP identifies additional trails that will be developed and opened to the public for wildlife observation, photography, environmental education and interpretation. Visitors using these trails, once opened, could encounter hunters on these trails.

Because the majority of hunting occurs early in the morning and later in the afternoon, non-hunters might decide to restrict their visit to the refuge to mid-day. Non-hunters, who have access to the refuge on a daily basis, will have to accommodate hunters on certain days during the year. Hunting is not allowed in Massachusetts on Sundays, thereby decreasing potential conflicts between users.

Alternative C

The impacts to visitors under Alternative C would be less than Alternatives B or D because shotgun deer hunting would not be allowed. Primitive firearm hunting

would be allowed, but like archery, muzzleloader hunting is conducted at fairly close range. The remaining impacts are similar to those described above in Alternative B.

Alternative D – *The Current Refuge Hunt Program* (Preferred Alternative)

Opening Assabet River NWR to white-tailed deer, turkey, woodcock, ruffed grouse, Eastern cottontail rabbit and gray squirrel hunting would allow greater opportunities for the public to harvest a renewable resource. The refuge would be promoting a wildlife-dependent recreational opportunity that is compatible with the purposes for which the refuge was established. Public awareness of Assabet River NWR and the National Wildlife Refuge System would have increased. In addition, some public demand for more local hunting activities would be met. This alternative would allow the public to enjoy hunting at an affordable rate in a region where private land and public land is often closed for hunting.

Visitor activities such as wildlife observation and wildlife photography that occur on trails in hunt areas may be curtailed, particularly during two-week shotgun deer season. There are currently twelve miles of unnamed nature trails at Assabet River NWR. Visitors on these trails may hear gunshot or may encounter hunters. Upland game (ruffed grouse, Eastern cottontail rabbit, squirrel), turkey, deer and woodcock hunting have occurred at the refuge for the past two years without conflict with non-hunters. It is known that some visitors avoid the refuge during shotgun season.

The Assabet River NWR CCP identifies additional trails that will be developed and opened to the public for wildlife observation, photography, environmental education and interpretation. Visitors using these trails, once opened, could encounter hunters on these trails.

Because the majority of hunting occurs early in the morning and later in the afternoon, non-hunters might decide to restrict their visit to the refuge to mid-day. Non-hunters, who have access to the refuge on a daily basis, will have to accommodate hunters on certain days during the year. Hunting is not allowed in Massachusetts on Sundays, thereby decreasing potential conflicts between users.

Modifications have occurred to visitor services actions since the CCP was completed in January 2005. A decision was made in 2005 to build a new visitor center for the Eastern Massachusetts National Wildlife Refuge Complex at Assabet River NWR. It is estimated that the visitor center, which will be located on Craven Lane, will eventually draw up to 100,000 visitors a year. Due in large part to the plan to site the visitor center on the refuge, the trail network is being modified to increase environmental education, interpretation, wildlife observation and wildlife photography opportunities near the visitor center. The new trail network will also reduce the trail miles located on old Army roads and increase the number of trail miles that are in the woods and are more “trail like”. Once the

visitor center is open, bicycles will be allowed on certain roads and trails to provide access to the visitor center and some wildlife viewing locations.

After the visitor center is built, we will modify the hunting zones on the refuge. Vehicles will be allowed to drive on Craven Lane to access the new visitor center. An increase in visitation and vehicles will decrease the quality of the hunt program. We do not currently run interpretation or education programs on the refuge during the hunt program, but will be facilitating those uses as the highest priority uses of the refuge once the visitor center is opened. The new trail system will not only provide a more pleasurable experience for most refuge visitors, it will also allow the staff to partition the multiple uses that occur on the refuge. It would also ensure a quality hunting experience by creating a buffer between the user types. This modification will reduce hunt opportunities on the refuge.

Summary Statement on Anticipated Direct and Indirect Impacts on Other Refuge Wildlife-Dependent Recreation

The evolving “characteristics” of hunting at the refuge will ultimately determine the impact on other wildlife-dependent recreation. The most significant are (1) the number of hunters, (2) the type of hunting, (3) the behavior of hunters, (4) the spatial distribution of hunting, and (5) the temporal distribution of hunting. Refuge hunting pressure is expected to be low to moderate. The number of permits issued for hunting will be limited, and the number of people hunting on the refuge on any given day will be low. Furthermore, hunters will be dispersed throughout the refuge. In addition, experience managing hunts at refuges within the Refuge System shows that many areas can safely support hunting and non-consumptive uses.

There will be impact to other refuge visitors. Most refuge visitors will be able to fully enjoy the refuge most of the hunting season with some or no modifications to their activities. The threat to visitor safety is much more a perceived threat than a real threat. The refuge does not anticipate any significant impacts to other forms of wildlife-dependent activities at Assabet River NWR.

b. Refuge Facilities

Alternative A – Current Management in 2003

Additional use of roads and trails would not occur. Periodic maintenance of existing roads and trails would not increase. However, other users would still be using permanent parking areas and trails, thereby necessitating periodic maintenance. Costs associated with a hunt program in the form of temporary parking area establishment, maintenance and snowplowing, as well as instructional signs, would not be needed.

Alternative B – The Service’s Proposed Alternative in 2003

Additional use of roads, trails and parking areas to accommodate the hunt program would occur. Periodic maintenance of existing roads and trails would not likely increase, as the volume of hunters and the amount of hunter use is expected to be light to moderate. Costs associated with the proposed hunting program will increase in order to maintain informational/directional signage and parking lots. These costs should be minimal relative to total refuge operations and maintenance costs and should not significantly diminish resources dedicated to other refuge management programs.

The visual aesthetics of the refuge would be diminished as there would be additional signs and parking areas on the refuge. Refuge amenities related to the hunt program would improve as revenue from the expanded amenity fees was returned to the hunt program.

Alternative C

The impacts under this alternative would be the same as Alternative B above.

Alternative D – The *Current Refuge Hunt Program* (Preferred Alternative)

The impacts under this alternative would be the same as Alternative B above.

Additional use of roads, trails and parking areas to accommodate the hunt program would occur. Under Alternative D, periodic maintenance or improvement of the existing small parking areas, roads, and trails will cause minimal negative impacts as the volume of hunters and the amount of hunter use is expected to be light to moderate. Costs associated with the proposed hunting program will increase in order to maintain informational/directional signage and parking lots. These costs should be minimal relative to total refuge operations and maintenance costs and should not significantly diminish resources dedicated to other refuge management programs.

Summary Statement of Anticipated Direct and Indirect Impacts on Refuge Facilities

There will be some impact to refuge facilities, primarily to refuge parking lots and signs. The costs to maintain parking areas and provide adequate signs will be reimbursed through fees generated by hunter permits. Under the preferred alternative, periodic maintenance or improvement of the existing small parking areas, roads, and trails will cause minimal negative impacts. These activities may cause some small-scale, site-specific soil erosion and damage to vegetation.

c. Cultural Resources

Alternative A – Current Management in 2003

There would be no cumulative impacts to cultural resources under this alternative, since the refuge would not be opened to the public under this alternative.

Alternative B – The Service’s Proposed Alternative in 2003

No impacts to cultural resources are anticipated above what may be caused by any refuge visitor. Although hunters would be able to access parts of the refuge that are closed to non-hunters, this access alone is not expected to increase vandalism or disturbance to cultural resources by individuals while they are hunting, nor is it likely that hunters will be more likely to engage in vandalism or disturbance than any other refuge visitor.

Alternative C

The impacts under this alternative are the same as Alternative B.

Alternative D - The *Current Refuge Hunt Program* (Preferred Alternative)

The preferred alternative requires little development such as construction of new trails and facilities, thereby producing no negative effect on the refuge’s cultural and historic resources. No impacts to cultural resources are anticipated above what may be caused by any refuge visitor. Although hunters would be able to access parts of the refuge that are closed to non-hunters, this access alone is not expected to increase vandalism or disturbance to cultural resources by individuals while they are hunting, nor is it likely that hunters will be more likely to engage in vandalism or disturbance than any other refuge visitor. Therefore, there are no anticipated adverse cumulative impacts to this resource from implementing Alternative D.

Summary Statement of Anticipated Direct and Indirect Impacts on Cultural Resources

Impacts to cultural resources are not anticipated.

3. Anticipated Impacts of the Proposed Hunt Program on the Refuge Environment and Community.

Alternative A – Current Management in 2003

Under this alternative, there would be no effects of a hunt program on the refuge environment and community.

A larger deer population could raise the deer tick population and the associated transmission of Lyme disease. Increased negative interactions between humans and deer would occur as greater numbers of deer forage on gardens and ornamental plants in residential neighborhoods and on agricultural crops. Incidents of deer-motor vehicle collisions may increase.

Alternative B – The Service’s Proposed Alternative in 2003

The impacts of allowing hunting may include disturbance of non-target species in the course of tracking prey, trampling of vegetation, possible creation of unauthorized trails by hunters, subsequent erosion, littering, and possible vandalism. Refuge staff will control hunter access to minimize any impacts. Hunts would be monitored for impact on refuge resources and, if any are found, appropriate adjustments would be made to eliminate them.

There is the potential for negative interactions between non-hunters and hunters. Opportunities for solitude for visitors walking trails on the refuge would be diminished while shotgun hunting was taking place on the main parcel north of Hudson Road.

Alternative C

Impacts would be similar to those identified above in Alternative B. However, there would be less of an impact on solitude because deer hunting during the shotgun season, which draws the greatest number of hunters to the refuge, would not occur under this alternative.

Alternative D – The *Current Refuge Hunt Program* (Preferred Alternative)

Only minimal impacts to the refuge environment, which consists of soils, vegetation, air quality, and water quality, are anticipated. Hunting may benefit vegetation, as it is used to keep many resident wildlife populations in balance with the habitat’s carrying capacity. Other impacts to vegetation are expected to be minimal and temporary. Refuge staff will control hunter access to minimize impacts.

The impacts of allowing hunting may include disturbance of non-target species in the course of tracking prey, trampling of vegetation, possible creation of unauthorized trails by hunters, subsequent erosion, littering, and possible vandalism. Refuge staff will control hunter access to minimize any impacts. Hunts would be monitored for impact on refuge resources and, if any are found, appropriate adjustments would be made to eliminate them.

Some non-hunting refuge visitors may be seasonally displaced due to concerns about safety while visiting the refuge during hunting season.

There would be an impact on solitude, but visitors can time their visit to maximize the likelihood of solitude. The biggest conflict with visitors will be shotgun noise from hunters. Given the distance most neighbors live from the refuge, disturbance from firearm noise is considered to be a minor impact to neighbors.

Comments on the refuge CCP and discussions with refuge visitors, suggest there exists both support and opposition to the refuge hunt program. There is less opposition to archery deer hunting than firearm hunting.

Many landowners suffer landscape damage due to deer on a regular basis. Transmission of Lyme disease may become a significant issue with large numbers of deer. Starvation can occur when deer numbers are high as food supplies dwindle in bad weather and deer-vehicle collisions become more common and problematic. Positive impacts from a well managed hunt program are expected to address these issues.

The newly opened hunts will result in a net gain of public hunting opportunities positively impacting the general public, nearby residents, and refuge visitors. Refuge staff expects increased visitation and tourism to bring additional revenues to local communities but not a significant increase in overall revenue in any area.

Summary Statement of Anticipated Effects of Alternatives on Refuge Environment and Community

The refuge's Preferred Alternative, the current hunt program, will have minimal impact on most refuge visitors. It will provide opportunities for members of the community to engage in wildlife-dependent and will reduce threats to homes and property from damage caused by deer.

4. Other Past, Present, Proposed, and Reasonably Foreseeable Hunts and Anticipated Impacts.

Alternative A – Current Management in 2003

Under this alternative, no hunting for big game or migratory game would occur. Hunting would not be proposed in the future. There would be no hunting allowed on the refuge and therefore, no cumulative effects on other past, present, proposed and reasonable foreseeable hunts are expected.

Alternative B – The Service's Proposed Alternative in 2003

Cumulative effects on the environment result from incremental effects of a proposed action when these are added to other past, present, and reasonably

foreseeable future actions. While cumulative effects may result from individually minor actions, they may, when viewed as a whole, become significant over time.

The implementation of any of the proposed actions described in this EA includes actions relating to the refuge hunt program. There were no previous hunt programs authorized on the refuge. Areas that would be open to hunting have been depicted on Map 2 showing species available for harvest and weapons permitted for use. As part of the hunt plan we determine exactly when hunting will be allowed. The maximum amount of time that the refuge will be open for hunting is the full state seasons for each type of hunting. It is possible that we would be open for a shorter duration, limited hours, or limited days of the week. It is not anticipated that this alternative would result in significant cumulative effects during the 15 years before the next CCP is prepared. No additional hunts are being considered for Assabet River NWR.

Alternative C

Cumulative effects on the environment result from incremental effects of a proposed action when these are added to other past, present, and reasonably foreseeable future actions. While cumulative effects may result from individually minor actions, they may, when viewed as a whole, become significant over time.

The implementation of any of the proposed actions described in this EA includes actions relating to the refuge hunt program. There were no previous hunt programs authorized on the refuge. Areas that would be open to hunting have been depicted on Map 3 showing species available for harvest and weapons permitted for use. As part of the hunt plan we determine exactly when hunting will be allowed. The maximum amount of time that the refuge will be open for hunting is the full state seasons for each type of hunting. It is possible that we would be open for a shorter duration, limited hours, or limited days of the week. It is not anticipated that this alternative would result in significant cumulative effects during the 15 years before the next CCP is prepared. No additional hunts are being considered for Assabet River NWR.

Alternative D – The *Current Refuge Hunt Program* (Preferred Alternative)

Cumulative effects on the environment result from incremental effects of a proposed action when these are added to other past, present, and reasonably foreseeable future actions. While cumulative effects may result from individually minor actions, they may, when viewed as a whole, become significant over time.

Changes to the status of hunting on the refuge occurred on September 13, 2005, when a Federal Register notice was posted, officially opening Assabet River NWR for deer, woodcock, turkey, ruffed grouse, Eastern cottontail rabbit, and gray squirrel hunting throughout the refuge. Areas that are open to hunting have been depicted on a Map 4 showing species available for harvest and weapons

permitted for use. As part of the hunt plan we determine exactly when hunting will be allowed. The maximum amount of time that the refuge will be open for hunting is the full state seasons for each type of hunting. It is possible that we will be open for a shorter duration, limited hours, or limited days of the week.

It was determined in the Assabet River NWR CCP, signed in January 2005, that a public big game (white-tailed deer and turkey), migratory bird (woodcock), and upland game (ruffed grouse, gray squirrel and Eastern cottontail rabbit) hunting program, conducted in accordance with State regulations and refuge regulations, was compatible with the purposes of the refuge and with the Mission of the National Wildlife Refuge System.

The implementation of the refuge hunt program as described will have both direct and indirect effects (e.g., new site inclusion may result in increased public use, thus increasing littering, noise, and vehicular traffic); however, the cumulative effects of these actions are not expected to be significant during the next 15 years.

It is anticipated that steps will be taken in 2008 to reduce and change hunt areas on the refuge in response to the opening of the Eastern Massachusetts NWR Complex visitor center.

5. Anticipated Impacts if Individual Hunts are Allowed to Accumulate

The other sections (A through D) of this cumulative impact analysis have looked at each type of hunting allowed on refuge lands and has discussed the impacts associated with individual hunt programs. In this section, potential impacts of accumulated hunts will be addressed.

Alternative A – Current Management in 2003

Under this alternative, no hunting would occur at Assabet River NWR. Because this alternative does not allow for any hunting on the refuge, there can be no impacts of accumulated hunts.

Alternative B – The Service's Proposed Alternative in 2003

The following table details the hunting seasons that would be open at Assabet River NWR under Alternative B.

Refuge Hunt	Hunt Season	Hunt Days
Spring turkey season	April 24-May 20	24
American woodcock	October 12-28 and October 30-November 11	27
Ruffed grouse	October 12 – November 24	37
Gray squirrel	October 13 – January 2	57
Eastern cottontail rabbit	October 13 – February 29	108
Deer (archery)	October 15 -November 24	36
Deer (shotgun)	November 26-December 8	12
Deer (muzzleloader)	December 10-December 31	19

Under this alternative, the refuge would be open for hunting on a total of 145 days. There are also a total of 320 hunting days on the refuge, as on some days there are multiple hunt seasons open. There are many days when the refuge is officially open for hunting, but little or no hunting occurs. This is particularly true during turkey, woodcock and upland game seasons. No hunting occurs in Massachusetts on Sundays.

Alternative C

Impacts are the same under Alternative C as they are under Alternative B.

Alternative D – The *Current Refuge Hunt Program* (Preferred Alternative)

The following table shows hunting seasons at Assabet River NWR under Alternative D, along with the dates when these seasons are open.

Refuge Hunt	Hunt Season	Hunt Days	Difference from Alt. B
American woodcock	October 12-28 and October 30-November 11	27	None
Upland game	October 14-February 28	117	None
Big game (archery)	October 16-November 25	36	Hunt area expanded
Big game (shotgun)	November 27-December 9	12	Hunt area decreased
Big game (muzzleloader)	December 11-December 30	18	Hunt area decreased
Spring turkey season	April 24-May 20	24	None

Under this alternative, the refuge would be open for hunting on a total of 145 days, the same as Alternatives C and D. There are also a total of 320 hunting days on the refuge, as on some days there are multiple hunt seasons open. There are many days when the refuge is officially open for hunting, but little or no hunting occurs. This is particularly true during turkey, woodcock upland game seasons. No hunting occurs in Massachusetts on Sundays.

The main difference between Alternative B and Alternative D is that the area open to big game (archery) is expanded and the areas open to big game (firearms) and big game (muzzleloader) are decreased.

Because many of the hunt seasons overlap, there are many days during the calendar year when no hunting occurs. Most refuge hunting occurs from mid October to the end of February. With the addition of one month in the spring for turkey hunting, the refuge is open to hunting for approximately 3 ½ months of the year, with no hunting on Sundays.

Because refuge hunting seasons overlap and are spread out in space and in time, the effect of accumulating impacts is decreased. For example, deer hunting does not occur at the same time as turkey hunting.

Service staff recognizes that all uses of refuge lands create some impact to refuge wildlife and their habitats. These uses, when taken together, have the potential to create accumulating impacts as the number of refuge uses increases. Because of this potential, refuge uses are limited to those uses which have been formally determined to be compatible with the purposes for which the refuge was established and with the Mission of the National Wildlife Refuge System. When these formal compatibility determinations are reviewed (every ten to fifteen years) possible accumulating impacts that may have occurred in succeeding years will be considered and will be addressed as necessary. Accumulated impacts of the refuge hunts proposed in Alternative D are not expected to have significant impacts

V. Consultation and Coordination with Others

This EA for creating hunting opportunities on the Assabet River NWR, tiers from the Draft Comprehensive Conservation Plan and Environmental Assessment (Draft CCP/EA) of July 2003 for the Assabet River, Great Meadows, and Oxbow National Wildlife Refuges.

In February of 2001 we recognized that producing a CCP/EIS for the entire Complex would be far too cumbersome to be efficient. At that time, we published a Notice of Intent to prepare a CCP/EA for five of the refuges in the Eastern Massachusetts NWR Complex - Assabet River, Great Meadows, Oxbow, Mashpee and Massasoit NWRs. Additional issues and a need for more information prompted us to later split Mashpee and Massasoit NWRs from the draft as well. The Draft CCP/EA was distributed for a 45 day public review and comment period from July 20 to September 3, 2003. We contracted with the U.S. Forest Service's Content Analysis Team (CAT) to compile the nearly 2,000 comments that we received. The CAT developed a summary report of comments as well as a database of individual comments. We utilized the original comments received, CAT report and comment database to develop a list of comments that required responses. Editorial suggestions and notes of concurrence with or opposition to certain proposals were noted and included in the decision making process, but did not receive formal responses. Based on results of the public review process, changes were made to the CCP where appropriate.

The final product of the process resulted in three stand-alone CCPs, one for each refuge. Implementation of the CCPs occurred after a Finding of No Significant Impact (FONSI) was signed by the Regional Director on January 5, 2005.

During the CCP planning effort, Service personnel consulted with a number of State agencies, with particular focus on MassWildlife. In many cases, these meetings regarded specific management efforts on refuges or land protection efforts associated with refuges in the Complex. We consulted with the following State agencies:

Massachusetts Division of Fisheries and Wildlife
Massachusetts Coastal Zone Management
Buzzards Bay Project Office
Massachusetts District Commission
Massachusetts Natural Heritage Office
Massport-Hanscom
Massachusetts Department of Environmental Management
Massachusetts Land Protection Task Force
Massachusetts GIS representatives
Massachusetts Executive Office of Environmental Affairs: Boston Harbor Watershed Team, Buzzards Bay Watershed Team, Cape and Islands Watershed Team, Ipswich and Parker Rivers Watershed Team, Merrimack and Shawsheen Watershed Team, Nashua River Watershed Team, North Coastal Watershed Team, South Coastal Watershed Team,

Taunton River Watershed Team, Ten Mile River and Narragansett Bay Watershed Team, and the Concord/ Assabet/ Sudbury Rivers Watershed Team

Additionally, refuge staff and Service biologists met with other partners gathering information and providing briefings and updates on our CCP and land protection efforts. Many of these groups work toward protecting land and natural resources in the vicinity of the Complex. These groups include:

Sudbury Valley Trustees, Nashua River Watershed Association, Organization for the Assabet River, The Nature Conservancy- Massachusetts Chapter, The Trust for Public Land, Massachusetts Audubon Society, Merrimack River Watershed Council, Massachusetts Watershed Coalition, Harvard Conservation Foundation, Conservation Commissions: Town of Concord, Town of Billerica, Town of Bedford, Town of Carlisle.

Many people wrote in to express opposition to hunting in general. Others recommended hunting be restricted to archery deer hunting. Others either supported hunting opportunities specifically or supported the preferred alternative, which included establishing the hunt programs.

During the preparation of the current EA, refuge staff contacted biologists from MassWildlife to obtain up-to-date species population estimates and hunter take information. Experts within the Service were also contacted to obtain migratory bird population estimates and hunter take information.

This EA was made available for a 30-day public review and comment period prior to the making of any final decisions regarding the refuge hunt program. The public was able to review the EA at the refuge complex headquarters at 73 Weir Hill Road in Sudbury, Massachusetts. It was also posted on the refuge website and notices posted at refuge kiosks and at the refuge complex headquarters.

VI. Regulatory Compliance

Comprehensive Conservation Plan

A draft CCP/EA which identified and evaluated three alternatives for a public hunt program at Assabet River NWR was distributed for public review and comment in July 2003. The Final CCP for Assabet River NWR was issued in January 2005, when the Regional Director determined that the implementation of modified Alternative B (presented in this EA as Alternative D), would not have a significant impact on the quality of the human environment in accordance with section 102 (2) (c) of the National Environmental Policy Act. It was determined that an Environmental Impact Statement was not required and a Finding of No Significant Impact was signed on January 5, 2005.

Hunt Plan

Refuge staff prepared a Hunt Plan in January 2005.

Federal Rule Making

Before hunting was allowed on the refuge, the Code of Federal Regulations was amended to authorize the hunting of migratory game birds and big game (white tailed deer) on Assabet River NWR. A public comment period for the Proposed Rule was announced in the Federal Register July 12, 2005. The Final Rule was published in the Federal Register on September 13, 2005.

Compatibility Determination

A compatibility determination was written and approved on December 21, 2004 for white-tailed deer, woodcock, turkey, and upland game (ruffed grouse, Eastern cottontail rabbit, and gray squirrel) hunting at Assabet River NWR. Hunting (with some restrictions) was found to be compatible with both the mission of the System and the purposes for which the refuges were established. The compatibility determination was published in the final CCP for Assabet River NWR.

National Environmental Policy Act Documentation

This Environmental Assessment meets the NEPA requirements.

Endangered Species Act Section 7 Evaluation

A Section 7 Biological Evaluation for the proposed hunt program at Assabet River NWR was completed in December of 2004.

Coordination with the State of Massachusetts

We consulted with MassWildlife in the development of the hunt program at Assabet River NWR. Official comments from the State were received on December 24, 2004.

Outreach Plan

An outreach plan was written and implemented. Information about the proposed opening of the refuge to waterfowl and archery deer hunting was made available to media, Federal, State and local officials, refuge visitors, adjacent landowners, and sportsmen's

groups via the internet, traditional press, kiosk postings, meetings, and one-on-one conversations.

News Release

A news release announcing the proposed hunting regulations at Assabet River NWR was released on July 18, 2005. The news release was sent to 28 newspapers throughout eastern Massachusetts.

This amended EA was available for public review at the headquarters of the refuge complex, located at Great Meadows NWR, 73 Weir Hill Road, Sudbury, Massachusetts for 30 days. It was also posted on the refuge website and notices were posted at refuge kiosks and the refuge headquarters. The availability of this document was also mentioned in talks to local interest groups such as refuge neighbors and Friends groups.

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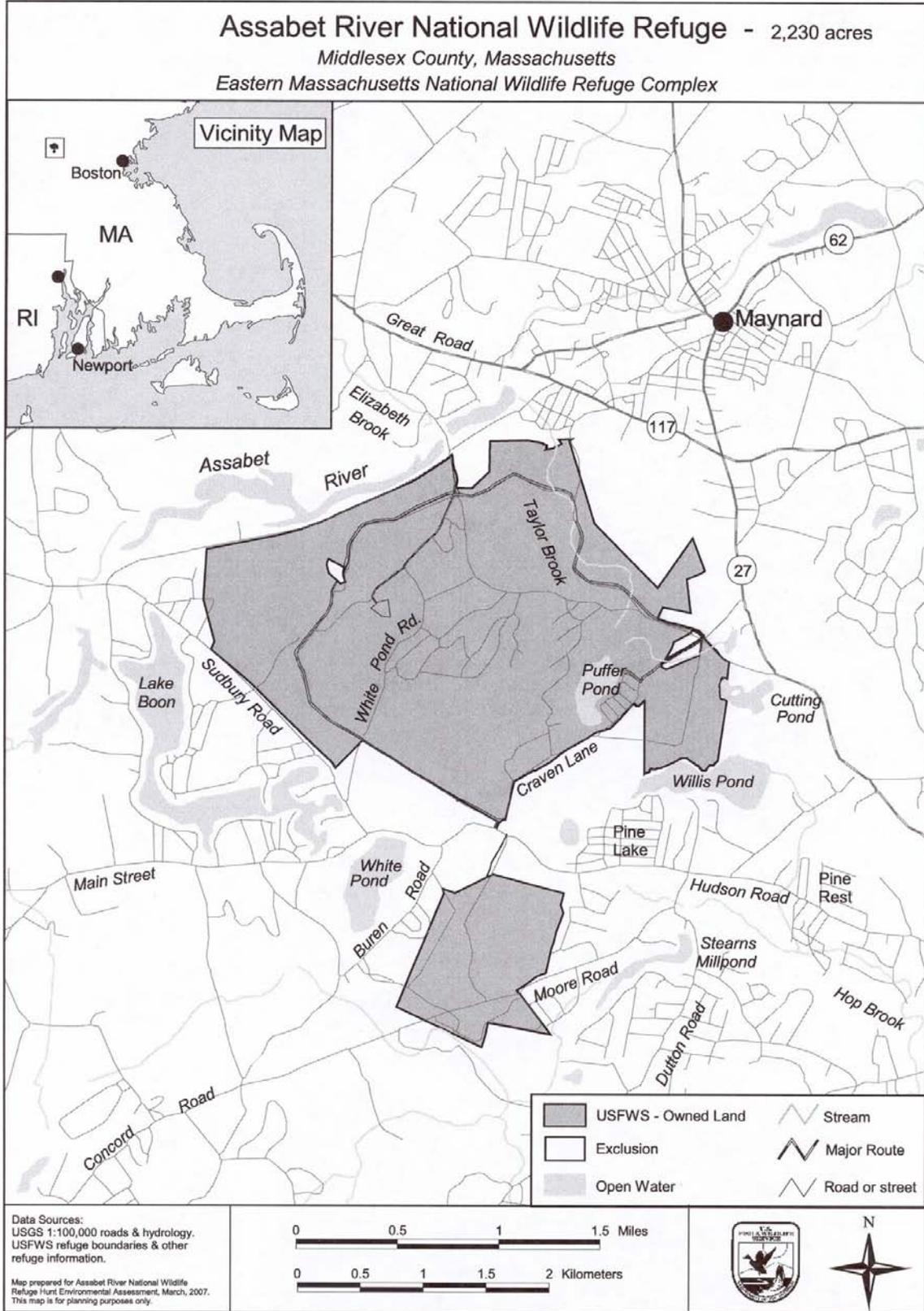
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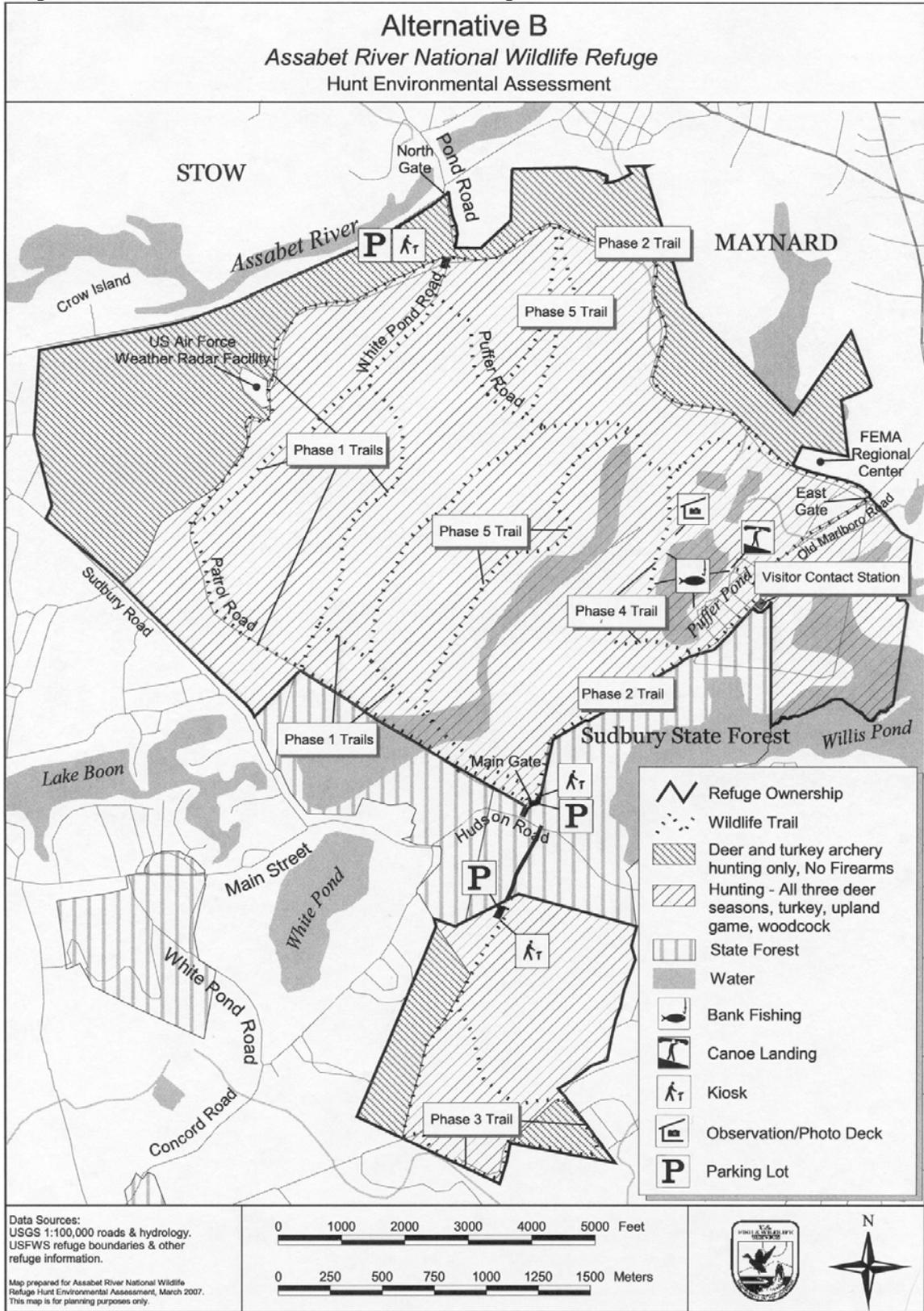
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Appendix A. Hunt Maps

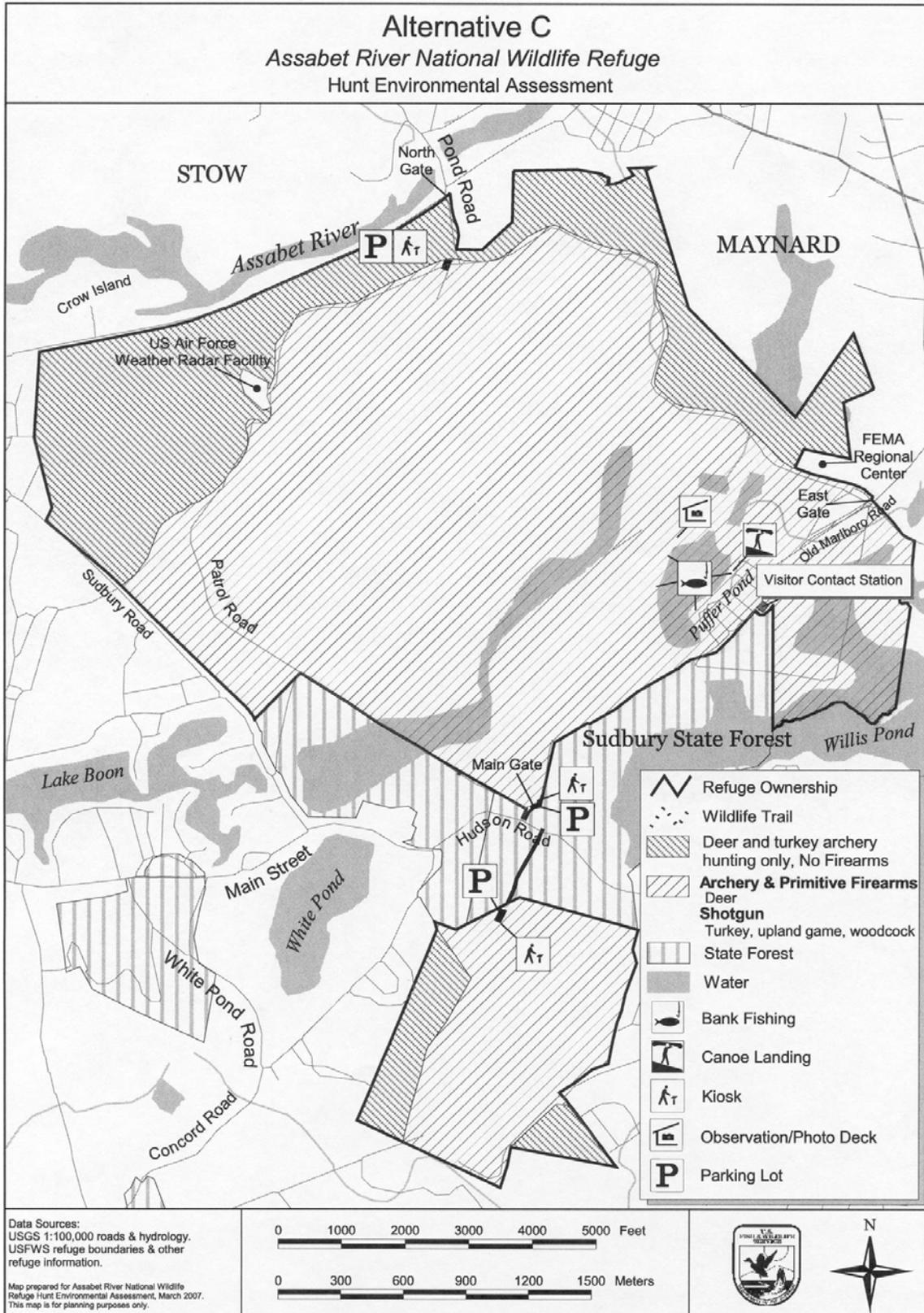
Map 1. Alternative A – Current Management in 2003



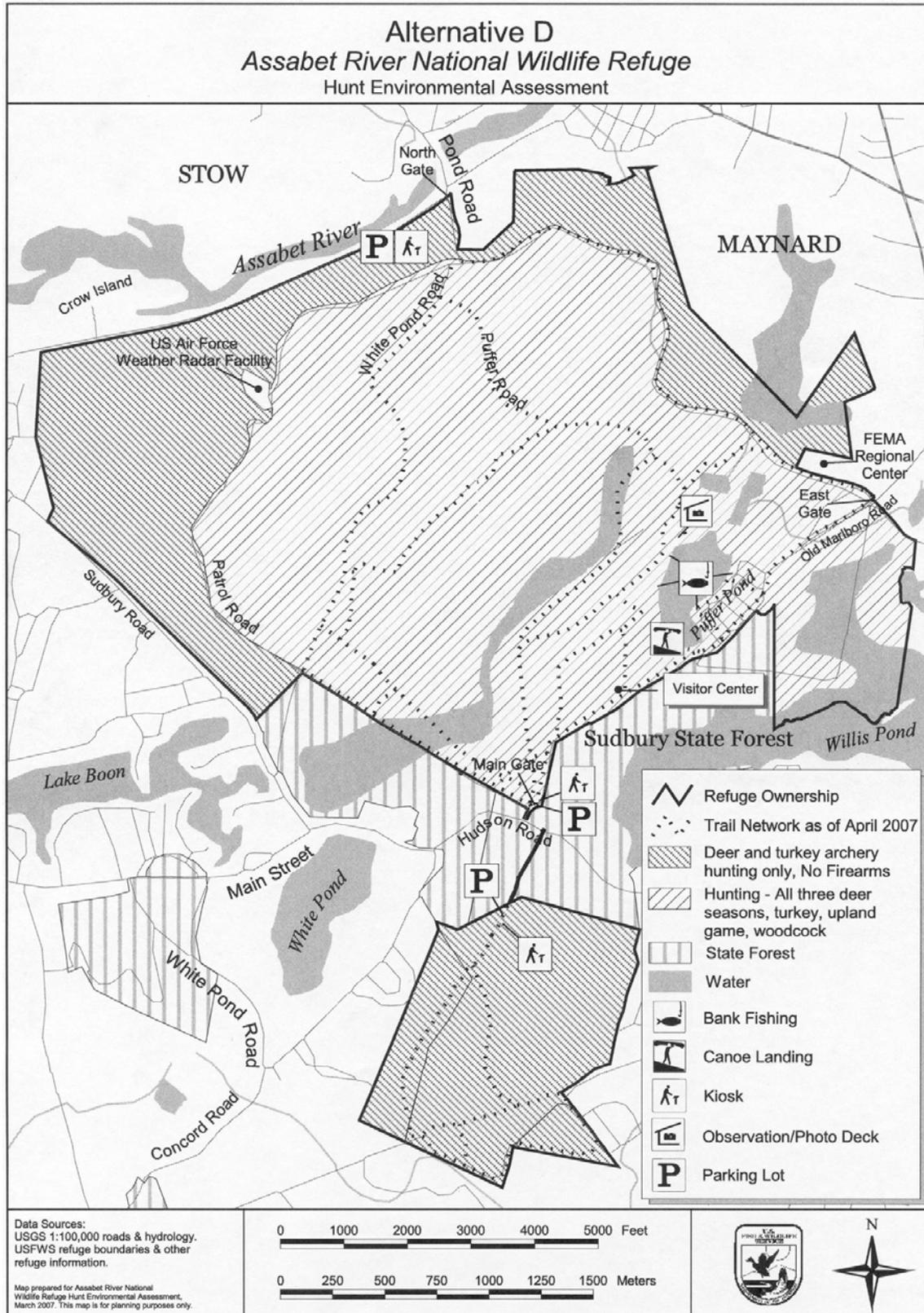
Map 2. Alternative B – The Service’s Proposed Alternative in 2003



Map 3. Alternative C



Map 4. Alternative D – The Current Refuge Hunt Program



Appendix B. Response to Public Comments

The draft Environmental Assessment (EA) for the Assabet River National Wildlife Refuge Hunt Program was available for public review and comment from March 15, 2007 through April 16, 2007.

The availability of the draft EA and two public meetings was announced in several newspapers, on the refuge website, on 8 kiosks located at Assabet River, Great Meadows, and Oxbow National Wildlife Refuges, via email to the Friends of Assabet River NWR and the Friends of Oxbow NWR, and to MassBird mailing lists, and in an email to the Humane Society of the United States (HSUS). The news release was sent to 33 local newspapers. Two interviews were conducted with journalists from local papers.

The draft EA was posted on the refuge website and was available at the headquarters of the refuge complex for review during normal business hours. A copy of the EA was given to the Massachusetts Division of Fisheries and Wildlife (MassWildlife).

Two public meetings were held at the refuge headquarters on April 11, 2007. A total of six people attended the two meetings. Four of the six attendees came to the meeting because of their specific interest in the hunt program at Assabet River NWR.

We received 36 written comments on our draft EA.

Comment: 33 respondents support hunting in general or were specifically in favor of the Alternative D, the preferred alternative.

Response: Support for the Service's preferred alternative is noted.

Comment: The Ruffed Grouse Society indicated that they found the range of alternatives deficient because additional hunting opportunities were not considered. They requested development and analysis of a fifth alternative which would open the area south of Hudson Road to shotgun hunting of small game, wild turkey and American woodcock. They requested the justification for closing refuge lands south of Hudson Road for these species in comparison with opening this area for shotgun hunting.

Response: The Service is not adding new hunt programs at this time. The area south of Hudson Road was designated an archery only area to provide opportunities for wildlife observation and photography to non-hunters who are not comfortable walking on lands open to shotgun or muzzleloader hunting. Refuge staff will be developing a visitor services plan for the refuge in 2008, and will consider this request at that time as part of a holistic effort to refine how the wildlife-dependent priority uses identified in the final Comprehensive Conservation Plan (CCP) for the refuge will be located and administered.

Comment: A comment made at the public meeting and in writing is that sport hunting is unethical and that the Service should not be promoting sport hunting on government land.

Response: Opposition to the hunt program is noted. Congress established hunting as a priority public use on national wildlife refuges in the National Wildlife Refuge System Improvement Act of 1997.

Comment: A comment made at the public meeting and in writing expressed strong fear for personal safety during hunt periods. Two people indicated their belief that hunting is not appropriate in this densely populated area. They believe the EA gives short shrift to this concern, which they indicate is both real and perceived.

Response: The comments were noted. Historical records from numerous organizations including MassWildlife indicate that hunting is a safe activity. There is no evidence to show that hunting is inherently less safe in more developed areas, including Massachusetts. The designated archery-only areas near residential areas provide an added level of consideration for refuge neighbors.

Comment: A comment made at the public meeting and in writing was that the hunt program is unfair to non-hunting user groups. They believe that 5 ½ months of hunting preclude non-hunters from using the refuge.

Response: The comments are noted. The Service believes its managed hunt program minimizes conflicts between refuge user groups. Non-hunters have the option of altering their visits to the refuge to times which are less likely to be actively hunted, to visit on Sunday, or to visit nearby lands where hunting is not allowed.

Comment: A comment made at the public meeting and in writing indicated that the draft EA did not discuss other options for population control for white-tailed deer.

Response: The infeasibility of non-lethal population control was noted in the draft CCP for the refuge and was subsequently rejected as an alternative. Therefore, it was not carried over to this draft EA. Neither is it feasible to trap and relocate deer, either from a staff resource point of view or from a habitat point of view. Sharpshooters could be employed, but it is not necessary to do so at this time when there is a willing pool of hunters and there is land available to support a deer hunt program.

Comment: A comment made at the public meeting and in writing stated that there should have been an alternative to open the refuge for public use except for hunting.

Response: The comment is noted. The Service proposed three different alternatives in 2003. Not opening the refuge to any public use was a legitimate alternative, as the land had been closed to the public for 60 years when it was a military base. Given the mandate by Congress to provide compatible hunting opportunities on all national wildlife

refuges, restricting the offering of a hunt program for the other alternatives was not consistent with national policy guidance and the law.

Comment: One person at the public meeting indicated that the wording to describe impacts from the hunt program, particularly to other refuge users, was weak and unsubstantiated. He would like to see data proving that impacts to non-hunters are minimal.

Response: The conclusions reached by the Service are based on two years of hunt program implementation and discussions with refuge visitors. Because we lack scientifically generated data from Assabet River NWR itself, we are less declarative in our statements. However, we are comfortable with the wording in this EA based on our experience in running hunt programs on national wildlife refuges in the northeast. We did review the text, corrected a typographical error, and reworded some language as appropriate.

Comment: One person at the public meeting indicated that the reason there aren't conflicts with hunters is because non-hunters will not get into a conflict with someone holding a gun.

Response: The comment is noted.

Comment: One person noted that hunters from the refuge will go onto private land that appears open and unoccupied and discharge firearms.

Response: Each hunter who receives a permit from the Service also receives maps and information. That information clearly states that hunters must observe all refuge boundaries and engage in an ethical hunt. Landowners who experience problems from hunters may call refuge law enforcement staff or Massachusetts Environmental Police. Law enforcement personnel from both organizations patrol the refuge on a regular basis.

Comment: One person noted that we frustrate hunters when we offer a hunt for non-existent or minimal populations of game.

Response: We do recognize that, at this time, there is somewhat limited habitat on the refuge for certain species. However, this will change over time as we institute habitat management programs to benefit migratory birds of conservation concern. Some of these management actions will increase habitat that is also suitable for game species. In the meantime, hunters are able to find and hunt the areas that do support the game species for which the refuge is open.

Comment: One person asked why we did not report hunter take information in the EA.

Response: We do not staff hunter check stations and have not made reported harvest a mandatory requirement of obtaining a refuge permit. We receive hunter feedback on a voluntary basis from hunters. While we find that information helpful, we know it is

incomplete. We are investigating making hunter feedback and harvest report mandatory. Privacy considerations may limit the amount of information we are allowed to collect.

Comment: One person indicated that a reduction in struggling upland game bird populations through hunting is self-defeating. A recommendation was made to halt upland game bird hunting until there are sustainable populations sufficient to sustain hunting. However, this person strongly supports the deer hunt, in acknowledgment that wildlife management does include the taking of wildlife through hunting.

Response: The EA indicates that hunting is not the limiting factor in upland game bird or migratory game bird populations, but rather lack of suitable habitat. Hunting does not impact the bird population on the refuge. If MassWildlife determined that the refuge should be closed to turkey or ruffed grouse hunting due to low population levels, we would close down these seasons. As indicated in the EA, woodcock hunting is managed by the Service and MassWildlife in consideration of impacts throughout the Flyway. This includes the take of individuals from areas such as the refuge.

Comment: One commenter requested an area currently designated for shotgun hunting be re-designated as archery only.

Response: At this time, we are not changing specific aspects of the hunt program, but will revisit this request when we develop the visitor services plan for the refuge in 2008. This area is open for shotgun hunting because the adjacent Sudbury State Forest is open for all hunt seasons, including shotgun.

Comment: One person asked if we have conducted surveys of rabbit populations on the refuge.

Response: We do not conduct surveys of resident wildlife populations, as they fall under the jurisdiction of the State (MassWildlife). We did consult with MassWildlife in the preparation of the EA, however. MassWildlife has no information on rabbit populations, other than to note that there has been a rabbit season for many years with no appreciable impact on the population.

Comments from four organizations were received in two letters. The Safari Club International (SCI) and Safari Club International Foundation (SCIF) submitted joint comments on SCI letterhead. They are a pro-hunting organization. The Humane Society for the United States (HSUS) and the Fund for Animals (FFA) submitted joint comments on HSUS letterhead. The HSUS letter contained comments related to hunting on the National Wildlife Refuge System as a whole and contained elements related to litigation filed in 2003 by the FFA against the Service. The HSUS provided generic comments that addressed the Service's efforts to produce revised environmental assessments for 74 hunt programs across the country. None of the HSUS comments were specific to Assabet River NWR.

Comment: The SCI was pleased to see that the EA correctly recognizes the role of deer hunting is assisting the refuge to improve and sustain the health of the deer population.

Response: The Service notes the comment.

Comment: The SCI states that the loss of hunting as a wildlife management tool could prove detrimental to migratory bird populations throughout the flyway in which the refuge is located and could reach beyond the boundaries of the refuge itself.

Response: The Service notes the comment.

Comment: The SCI wonders whether the impact of Canada goose hunting on other migratory birds that utilize the refuge has been considered. They note that Canada geese are known to overgraze plant habitat required by other species, their destructive behavior leads to soil erosion and to water contamination.

Response: The Service notes the comment. The refuge is not open for waterfowl hunting, and is not considering the opening of the refuge for this activity at this time.

Comment: The SCI recommends the cumulative analysis be modified to better describe the benefits of hunting to wildlife populations.

Response: The Service notes the comment. We believe the benefits of hunting white-tailed deer have been adequately described in the EA.

Comment: The SCI recommends that the EA assess the detrimental impacts of the loss of hunting on a refuge system-wide scale.

Response: The EA has been amended to reflect these impacts. Please see the cumulative impacts of Alternative A for each of the wildlife species included in Section IV.

Comment: The HSUS states that the EAs produced by the Service were mass produced, make work exercises that do not adequately assess cumulative and other impacts.

Response: This EA was written by Assabet River NWR personnel using information from refuge staff (managers, biologists, and visitor services professionals) who are professionally and personally knowledgeable about the refuge and its use by wildlife and visitors.

Comment: The HSUS states that the “FWS is failing to provide adequate notice and the opportunity to comment” on the EA.

Response: This EA was available for a 30-day review period from March 15, 2007 to April 16, 2007, as noted above. There was extensive outreach conducted with the press, local organizations, and the general public, as described above.

Comment: The HSUS states it did not receive the EA “within an adequate timeframe to prepare detailed comments”.

Response: The Service sent Mr. Andrew Page of the HSUS an email on March 15, 2007 informing him of the availability of the draft EA for public review and comment on the refuge website and providing him with the website address to facilitate his access to the document.

Comment: The HSUS states that the Service can only allow hunting if it is compatible with the purposes for which the refuge and the refuge system was established. The HSUS states that the allowing hunting materially interferes with and detracts from the non-consumptive priority uses of the refuge.

Response: The Service has followed its regulations for determining that hunting at Assabet River NWR is compatible. A compatibility determination for hunting was signed by the Regional Chief of the National Wildlife Refuge System on December 7, 2004 and was included in the final CCP for Assabet River NWR.

Comment: The HSUS states that other, non-consumptive users of refuges are negatively impacted when hunting is allowed.

Response: The Service has addressed impacts on other programs and users in the EA. At Assabet River NWR, no refuge visitors have reported complaints about hunters in the two years that the refuge has expanded the hunt program, and no complaints had been made when the refuge was previously opened for woodcock, snipe, grouse, squirrel and rabbit hunting. Individuals have expressed concern about being on the refuge while hunting is allowed, and some individuals have decided not to visit the refuge during the hunt season.

Comment: The HSUS states that the EA fails to show that the Service has complied with its obligation to monitor the status and trends of fish, wildlife and plants.

Response: The Service notes the comment. Each year, biological surveys are conducted at Assabet River NWR.

Comment: The HSUS states that the Service must ensure the availability of sufficient funds before approving hunting on the refuge under the statutes of the Refuge Recreation Act.

Response: Sufficient funds are available to implement the hunt program, as stated on page 7 of the Assabet River NWR hunt plan.

Comment: The HSUS states that the “EAs fail to address cumulative impacts throughout the entire refuge system, the flyways of migratory birds, specific regions of the country, or even the state in which the refuge is located”.

Response: The Service provided a cumulative impact analysis in this EA which looked at national, state, regional and local impacts of hunting on wildlife populations.

Comment: The HSUS states that the new EAs generally include an argument that “while cumulative effects may result from hunting, and when viewed as a whole, these impacts may become substantial over time, the impacts from hunting are not expected to be substantial”.

Response: The draft EA for Assabet River NWR did not make such a statement. We hold a limited hunt program and cumulative effects from hunting are expected to be negligible. Some of the uses included in the HSUS comments are not allowed on Assabet River NWR.

Comment: The HSUS states that the Service has failed to explain why an Environmental Impact Statement is not required.

Response: Please refer to the Finding of No Significant Impact.

Comment: The Service must provide a cumulative impact analysis for hunting on the refuge system as a whole.

Response: The Service notes the comment.

Comment: The HSUS states that the Service did not identify all the relevant environmental concerns or take a “hard look” at impacts on the Refuge System as a whole.

Response: The Service notes the comment.

Comment: The HSUS states that the Service “appears to continue to rely on the Migratory Bird Hunting Framework process for its analysis of cumulative impacts to migratory birds” and that “the framework process entirely ignores the adverse and cumulative impacts to migratory birds from non-migratory bird hunting and ignores the impacts to migratory bird habitat from hunters”.

Response: The Service notes the comments.

Comment: The HSUS states that the Service may not unduly narrow the purpose and need for hunting in order to make sport hunting the only alternative that meets the agency’s stated purpose.

Response: The purpose of this EA is to evaluate the impacts associated with a hunt on the Assabet River NWR. The hunt program is part of the overall management program at the refuge, which includes wildlife and habitat management, public use programs, law enforcement and grounds and buildings maintenance.

Comment: The HSUS states that the alternatives proposed in the EA fail to constitute a reasonable range of alternatives.

Response: Three alternatives were included in the draft CCP and four alternatives were included in the EA. These alternatives varied by offering different types of hunting in different areas of the refuge as well as an alternative that would not expand the hunt program from what was already in place in 2003. These alternatives do constitute a reasonable range of alternatives.

Comment: The HSUS indicates that the Service failed to consider alternatives that provide for non-lethal management of wildlife.

Response: This issue was addressed in the draft comprehensive conservation plan for the Assabet River NWR and is not appropriate for an assessment of the impacts of hunting on a refuge.

Comment: The HSUS requests that a non-consumptive use alternative be analyzed.

Response: Alternative A in the EA would not allow hunting on the refuge.

Comment: The HSUS discusses compliance with the Endangered Species Act, including the preparation of biological assessments and opinions.

Response: This EA does discuss the impacts of each alternative on endangered species. Additionally, an intra-Service Section 7 biological evaluation was conducted in December 2004. There are no Federal endangered or threatened species on the refuge. Concurrence was received on the finding of no effect/no adverse modification. There was also a finding of no effect on proposed species and no adverse modification of proposed critical habitat.

Comment: The HSUS states that the Service has compromised the biological integrity of refuges by allowing hunting.

Response: The Service notes this comment.

Comment: The HSUS states that the impacts of hunters on non-consumptive users has not been a significant concern to the Service.

Response: The Service has addressed impacts to other refuge programs, including use of the refuge by non-hunters, and to the adjacent community. Hunt programs were developed and are managed to minimize impacts to other refuge users.

Comment: The HSUS states that the Service has failed to capitalize on the potential economic gain that would come from non-consumptive users.

Response: The Service notes this comment.

Comment: The HSUS states that the eastern United States landscape is highly modified, and that deer play a role in the function of the ecosystem. The HSUS states that deer herbivory ultimately does not effect the resulting climax condition of a forested landscape that there is no data to support that hunting deer will reduce deer vehicle collisions.

Response: The Service notes these comments.

Comment: The HSUS provides comments about bear hunting.

Response: Bear hunting is not allowed or proposed at Assabet River NWR.

Comment: The HSUS states that “the fact that hunting is not considered the primary reason for this species (woodcock) apparent decline does not prove that hunting is not contributing to this decrease.”

Response: The comment is noted.

Comment: The HSUS states that additional ducks will be harvested but the EAs do not elaborate “as to the species of duck that may be harvested”.

Response: Waterfowl hunting is not allowed or proposed at Assabet River NWR.

Comment: The HSUS states that woodcock, American black ducks, pintail, greater and lesser scaup and king rails should not be hunted because their populations are declining.

Response: The Service relies on the Migratory Bird Sport Hunting Frameworks to set hunting regulations of migratory birds annually. These frameworks are based on the best biological information available. Of the species identified specifically by the HSUS, only woodcock is hunted on the refuge. The text of the EA has been amended to reflect our knowledge of harvest over the past two hunt seasons.

Comment: The HSUS states that the ability of hunters to correctly identify most waterfowl species is “deplorable”.

Response: The Service notes the comment, and reiterates that Assabet River NWR is not open to waterfowl hunting.

Comment: The HSUS states that the Service’s assertion that the impact of hunting on populations of squirrels, rabbits, raccoons, opossums, coyotes, beavers and quail cannot be affected regionally because of these species limited home ranges is “nonsensical”. They indicate that coyote and raccoon traverse long distances and opossums have nomadic behavior.

Response: The Service notes this comment. Assabet River NWR is not open to the hunting of raccoons, opossums, coyotes, beavers and quail. In 2006, 44 hunters had

permits to hunt upland game. Only about half of the hunters actually hunted, and many harvested no game.

Comment: The HSUS states that disturbance to female turkeys during the nesting season, increase in the potential for nest predation, inadvertent take of hens, and a lack of synchrony between gobbling and breeding could result in a “major, negative effect on the currently unknown population levels of wild turkey in the Refuge”.

Response: The Service notes this comment. The refuge is open for turkey hunting but the number of permits issued is low (20 spring turkey) and hunting is restricted.

Comment: The HSUS states that the EA makes no effort to address the impacts of this spring turkey hunt on any aspect of the Refuge or its visitors.

Response: Impacts of turkey hunting on the refuge are included in the cumulative impacts analysis for Alternative D for resident wildlife (turkey) and other wildlife-dependent recreation.

Comment: The HSUS states that a number of EAs make reference to planned nuisance animal control hunts but make no effort to assess the impacts of such hunts.

Response: There are no nuisance animal hunts proposed for the Assabet River NWR.