U.S. DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

ENVIRONMENTAL ASSESSMENT

Final (1/2011)

for
Proposed Hunting Plan for Crane Meadows National Wildlife Refuge
Morrison County, Minnesota

Regional Director
Region 3, U. S. Fish and Wildlife Service
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Abstract: The United States Fish and Wildlife Service is proposing to provide hunting opportunities on Crane Meadows National Wildlife Refuge in Little Falls, Minnesota that are compatible with the purpose of the Refuge. This environmental assessment evaluates three possible alternatives for hunting opportunities. The preferred alternative would offer compatible hunting opportunities while providing non-hunting visitors with other priority public use opportunities (i.e., wildlife observation, wildlife photography, environmental education and interpretation). The broad goals of the Crane Meadows NWR Hunting Plan are as follows:

- Provide the public with safe and enjoyable hunts that are compatible with Refuge purpose.
- Provide quality hunting opportunities that minimize conflict with other public use activities, as well as conflicts with adjoining neighbors.
- Provide the public with opportunities to hunt wildlife species consistent with the laws and regulations of the State of Minnesota that do not adversely affect local wildlife populations, and are consistent with the 1997 National Wildlife Refuge System Improvement Act.
- Provide hunting opportunities for persons with disabilities if it is determined to be an acceptable wildlife-dependent public use.

This EA is being submitted to address Hunting Opportunities Proposed on Crane Meadows NWR, and has incorporated a cumulative impact analyses to meet NEPA requirements.

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Crane Meadows

National Wildlife Refuge

Environmental Assessment

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Chapter 1: Purpose and Need

1.1 Background

This Environmental Assessment (EA) was prepared using guidelines established under the National Environmental Policy Act (NEPA) of 1969. NEPA requires examination of the effects of proposed actions on the natural and human environment. This EA covers the hunting chapter, which is preceding the overall Visitor Services Plan for the Refuge. In the following sections three alternatives are described for the future Hunting Opportunities on Crane Meadows National Wildlife Refuge (NWR), the environmental consequences of each alternative, and the preferred management direction based on the environmental consequences and the ability to achieve the purpose of the Refuge.

Crane Meadows NWR was created under the authority of the Emergency Wetlands Resources Act of 1986 (EWRA). The Act was enacted by Congress to promote the conservation of our Nation's wetlands by intensifying cooperative efforts among Federal agencies, states, local governments, and private interests for the conservation, management, and acquisition of wetlands. The Act requires the Secretary of the Interior to establish a National Wetlands Priority Conservation Plan to assist decision makers in identifying and selecting important wetlands for preservation through Federal and state acquisition.

The Refuge was established in 1992 to conserve and protect the diminishing number of high quality wetlands that remain on the American landscape. It is the location of one of the largest most intact sedge meadow wetland complexes in the state; it also protects and maintains important wildlife, recreation, and archaeological resources.

The Comprehensive Conservation Plan (CCP) for Crane Meadows National Wildlife Refuge was completed in 2010, which included an EA. The EA and CCP addressed future management of the Refuge, including visitor services. Of the six priority public uses (hunting, fishing, wildlife observation, photography, environmental education and interpretation) identified in the 1997 National Wildlife Refuge Improvement Act, currently hunting and fishing do not occur on the Refuge.

The Crane Meadows wetland complex has been important to wildlife and people for thousands of years. The Refuge is located in central Minnesota and falls within a transitional zone between tallgrass prairie and deciduous forest (Figure 1). The location of Sherburne NWR has also been denoted since the two Refuges are complexed with one another for joint management. Currently there are approximately 1,800 acres of land acquired within 13,540-acre acquisition area. Approximately 900 acres are owned and managed by the state of Minnesota, and the remaining land is privately owned. The area of the Refuge is a mosaic of open water, wetlands, floodplain forest, wet prairie, dry prairie, savanna, upland conifer and deciduous forest. The diversity of habitat is matched by a diversity of wildlife.

1.2 Purpose

The purpose of this Environmental Assessment is to evaluate different alternatives for implementing a Hunt Plan on Crane Meadows NWR. These alternatives include current management where no hunting is allowed, as well as a few other alternatives exploring new hunting opportunities.

1.3 Need for Action

The 1997 National Wildlife Refuge System Improvement Act mandated six priority public uses be provided when feasible and compatible with the purpose of the Refuge. These priority uses include hunting, fishing, wildlife photography, wildlife observation, environmental education and interpretation. The need for action therefore revolves around hunting as a priority use and the requirement to allow hunting that is compatible with the purpose of the Refuge. There is also a need to reserve a portion of the Refuge for non-hunting visitors.

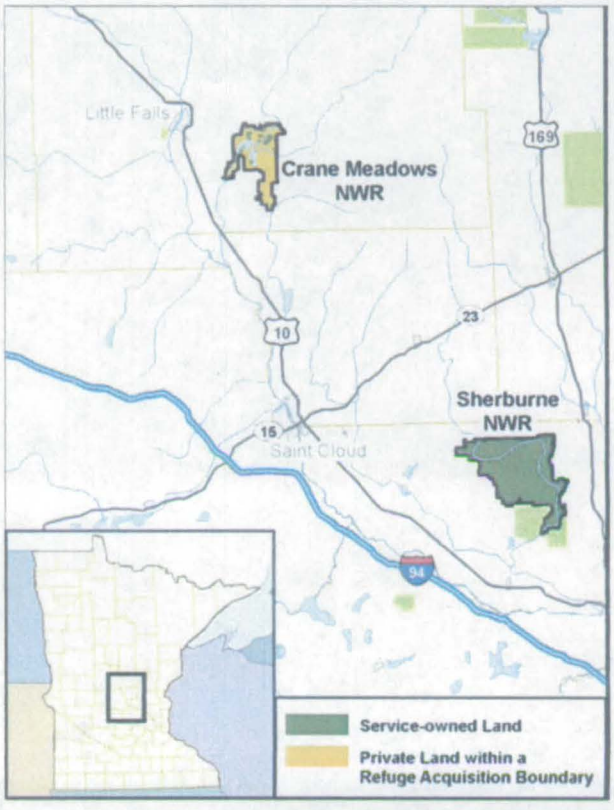


Figure 1: Location of Crane Meadows NWR

The 2010 CCP for Crane Meadows NWR involved an EA which addressed several hunting alternatives. The Preferred Alternative states the Refuge should work with partners to open managed white-tailed deer and wild turkey hunts on specified Refuge units for hunters with disabilities and youth hunters. Required by NEPA, this EA addresses cumulative impacts in detail.

Three goals were identified for Crane Meadows NWR:

Goal 1: Habitat

Conserve a diverse mosaic of habitats both on- and off-Refuge, particularly sedge meadow, shallow lake, oak savanna, prairie, and other declining endemic habitat types, to meet the needs of native plants and wildlife with emphasis on Service Regional Conservation Priority Species. Crane Meadows NWR will remain engaged in efforts to protect and enhance water quality and natural hydrology in the watershed.

Goal 2: Wildlife

Protect, restore, and maintain native wildlife species to ensure biological diversity and abundance, with special emphasis on Service Regional Conservation Priority Species.

Goal 3: People

As an active partner in collaborative conservation, the Refuge will provide quality wildlife-dependent recreation, environmental education, and outreach to a diverse audience. These activities will preserve cultural resources and promote understanding, appreciation, and support for Crane Meadows NWR, the National Wildlife Refuge System, and natural resource conservation.

1.4 Decision Framework

The Regional Director for the Great Lakes-Big Rivers Region (Region 3 of the US Fish and Wildlife Service) will need to make two decisions based on this EA: (1) select an alternative and (2) determine if the selected alternative is a major Federal action significantly affecting the quality of the human environment, thus requiring preparation of an Environmental Impact Statement (EIS).

The following three Alternatives were developed. Alternative C has been recommended to the Regional Director. The Draft Hunt Plan was developed for implementation based on this recommendation.

1. Alternative A: No Action (Current Direction) – Under this alternative, no hunting will be allowed anywhere on the Refuge. There would be no change to current public use opportunities and wildlife management programs.

2. Alternative B: Open the Headquarters Unit to a white-tailed deer hunt for persons with disabilities.

3. Alternative C: Preferred Alternative – Open portions of Crane Meadows NWR to special deer firearms and archery hunts for youth and persons with disabilities. In addition, open a portion of Crane Meadows NWR to special spring wild turkey hunts for youth and persons with disabilities.

   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.

1.5 Authority, Legal Compliance, and Compatibility

The National Wildlife Refuge System includes federal lands managed primarily to provide habitat for a diversity of fish, wildlife and plant species. National wildlife refuges are established under many different authorities and funding sources for a variety of purposes. The purpose for the establishment of Crane Meadows NWR was to protect a large wetland complex as outlined in Section 1.1.

In the past the ability to open a refuge to hunting was covered under the National Wildlife Refuge Administration Act, 16 U.S.C 688dd (a) (2). This Act was amended in 1997 by the National Wildlife Refuge Improvement Act of 1997 (Public Law 105-57). These Acts support hunting opportunities on Crane Meadows NWR as proposed in this document as follows: .

"... conservation, management, and ... restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans... fl 16 U.S.C. §668dd(a)(2) (National Wildlife Refuge System Administration Act)

"... compatible wildlife-dependant recreation is a legitimate and appropriate general public use of the System, directly related to the mission of the System and the purposes of many refuges...." Public Law 105-57, 111 STAT. 1254, Sec.5. (B) (National Wildlife Refuge Improvement Act of 1997).

The U. S. Fish and Wildlife Service developed a strategic plan for implementing the 1997 National Wildlife Refuge System Improvement Act called "Fulfilling the Promise" (USFWS, 1999). This plan clarifies the vision for the National Wildlife Refuge System and outlines strategies for improving delivery of the System's mission. The proposed hunting plan is compatible with the priorities and strategies outlined in "Fulfilling the Promise".

Additional authority delegated by Congress, federal regulations, executive orders and several management plans, such as the 2010 Comprehensive Conservation Plan (CCP), guide the operation of the Refuge. The appendices of the CCP contain a list of the key laws, orders and regulations that provide a framework for the proposed action.

1.6 Scoping of the Issues

The scoping for the hunting program began during the Comprehensive Conservation Plan development process for Crane Meadows in December 2008 with a kickoff meeting between Refuge staff, USFWS Region 3 planning staff, and a consultant assisting with preparation of the CCP. The group reviewed existing baseline data, discussed the vision statement and goals of Crane Meadows and reviewed existing baseline resource data and relevant planning documents. In addition, the group also identified a preliminary list of stakeholders, issues, concerns, challenges, opportunities, new directions, and potential sources of conflict to be addressed in the CCP. During the last week of March 2009, the Refuge hosted a planning workshop where participants helped review, evaluate, and plan the biological and visitor services programs at the Refuge. Development of a hunting program was one of the opportunities discussed during these meetings as a potential public use opportunity and what hunting seasons were desired.

Public input was encouraged and obtained using several methods, including an open house on February 19, 2009 where more than 50 people attended. This gave the public an opportunity to discuss ideas with Refuge staff and regional planners. These events, as well as the CCP process

for the Refuge and comment period and listening post in December 2010 for the proposed Hunt Plan were well advertised via computer, newspaper, radio, word of mouth.

1.6.1 Issues and Concerns

A variety of issues, concerns, and opportunities were addressed during the CCP process. Several recurring themes, including those related to hunting, emerged from discussions among citizens, open house attendees, focus group participants, resources specialists, and Refuge planning staff. Hunting was originally discussed during public meetings that led to the establishment of Crane Meadows NWR in 1992, and has remained a public expectation ever since. Because such promises have not been fulfilled, it was one of the greatest concerns among the local community that were discussed during the planning process. A complete list of issues may be found in Chapter 2 of the 2010 CCP.

Chapter 2: Description of Hunting Alternatives

2.1 Formulation of Hunting Alternatives

Three management alternatives dealing with hunting were created during the development of the CCP for Crane Meadows NWR. The alternatives were based on issues, concerns and opportunities raised at the CCP scoping processes. The issues came from a variety of sources: the general public, local citizens and officials, cooperating agencies, colleges, conservation organizations, as well as Refuge staff.

Factors considered in the development of alternatives were:

1. Compatibility with the purpose of the Refuge and the mission of the National Wildlife Refuge System.
2. Natural resources of the Refuge
3. Demands, expectations and conflicts of public use, with concerns for safety.
4. Issues identified in the CCP and the CCP EA.
5. Comments and requests from partners
6. Hunting opportunities on adjoining State Wildlife Management Areas
7. Requirements and guidance provided in establishment legislation.

Of the three alternatives developed in the Refuge CCP, the planning team selected a preferred objective offering new hunting opportunities in the next 15 years. The objective states, "work with partners to open managed white-tailed deer and spring turkey hunts on specified Refuge units for hunters with disabilities and for youth hunters". This objective was associated with several strategies including:

- Prepare and submit all materials required to open hunting as a use on the Refuge.
- Partner with Minnesota DNR, Wheelin' Sportsmen, National Wild Turkey Foundation, Capable Partners, Minnesota Deer Hunters Association, Pheasants Forever, Camp Ripley, Minnesota State Archery Association, local sportsmen's clubs, and others to conduct managed hunts.

- Prepare the Headquarters, Sedge Meadow, and Platte River West Units for managed hunts.
- Provide adequate boundary signage on all hunting areas.
- As additional land is acquired, re-evaluate the areas available and safe for hunting with the ultimate goal of opening additional areas of the Refuge to hunting.
- Increase law enforcement as the hunting program expands.
- Manage hunts to minimize conflicts with other uses and resources.
- Assist with hunter education.
- Survey participants in specialized hunts in order to improve the program.
- Adhere to state regulations for hunting activities.
- Further define Refuge management of the hunting program as a part of the visitor services step-down plan, which should be completed within 2 years of the CCP approval.

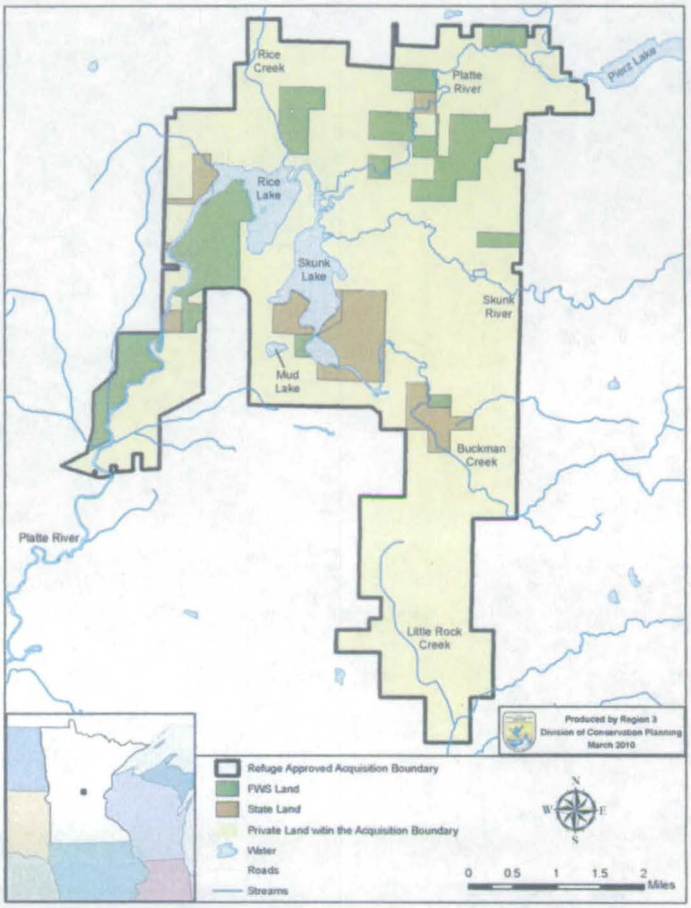


Figure 2. Land ownership within Crane Meadows NWR acquisition boundary

2.1.1 Alternative A: Current Direction (No Action) – No hunting on the Refuge

Under Alternative A (No Action), Crane Meadows is currently not open to hunting because Service land ownership inside the Refuge acquisition boundary is relatively small, scattered, and interspersed with privately owned land (Figure 2).

2.1.2 Alternative B: Open Refuge to a Special Firearms Deer Hunt for Hunters with Disabilities.

Under Alternative B, open the Headquarters Unit to white-tailed deer hunting for individuals with disabilities (Figure 3). One special hunt will be allowed each year. The Headquarters Unit will offer the greatest accessibility for hunters and this location will simplify operational needs.

The following outlines the general details of the hunt:

Deer Hunt

Who: Hunters with disabilities for firearms. The selection will be determined by a first come first serve basis through an application process. A maximum of 15 hunters will be allowed to participate.

What: A 3 day white-tailed deer hunt starting on a Friday and finishing on Sunday. Hunters will abide by State rules and regulations governing deer hunting. The preceding Thursday will be orientation and briefing for hunters, as well as their assistants.

When: The Deer hunt will be conducted during early fall; either the first or second weekend in October.

Where: Headquarters Unit (see Figure 3)

How: Hunts will be administered by Refuge staff with the help of volunteers, groups, organizations, etc, will plan and coordinate hunt efforts.

2.1.3 Alternative C (Preferred Alternative): Open Refuge to Firearms and Archery Deer Hunts and Spring Turkey Hunt for Youth and Persons with Disabilities.

Open select areas of Crane Meadows NWR to white-tailed deer firearms and/or archery hunts, as well as spring turkey hunt for youth and persons with disabilities that are consistent with state seasons and regulations. The following are the proposed units to open for hunting opportunities (Figure 3):

- Platte River West Unit = 272 acres
- Headquarters Unit = 466 acres
- Sedge Meadow Unit = 387 acres

Hunting activities will be permitted, but administratively limited to those areas specified in the Refuge-specific regulations. The following areas will be considered designated hunting areas based on access, ability to manage, and boundary locations: the Headquarters, Sedge Meadow, and Platte River West Units (see Figure 3). All or parts of the Refuge may be closed to hunting at any time if necessary for public safety, to provide wildlife sanctuary, burning, or for other reasons.

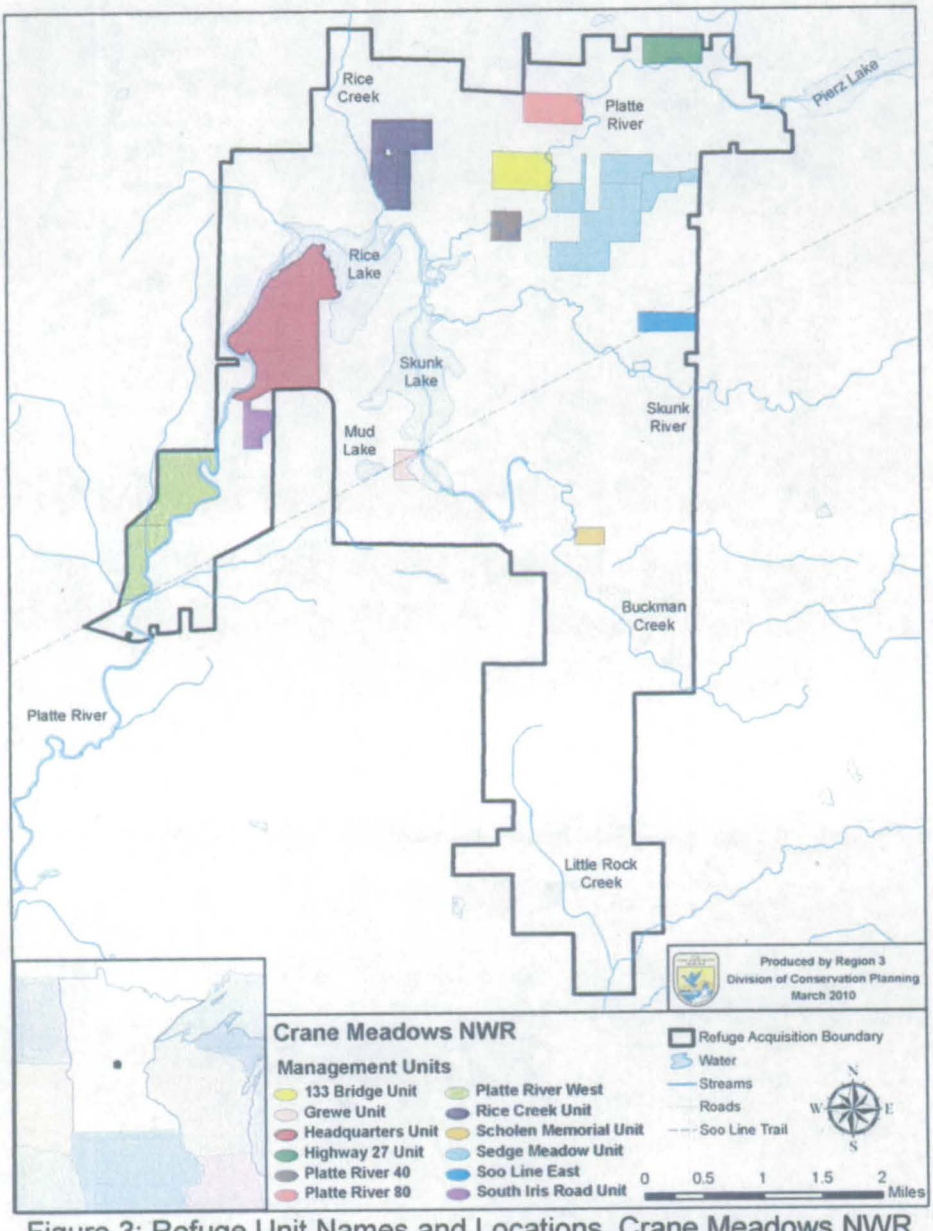


Figure 3: Refuge Unit Names and Locations, Crane Meadows NWR

The Service will make every effort to minimize any negative impacts to non-target wildlife species during these specialty hunts. Because the proposed turkey hunt will coincide with part of the nesting and breeding season (i.e. "sanctuary time") of many wildlife species, the proposed hunt will be limited in time, number of participants, and locations. Youth turkey hunting access will be by walking (or bicycling, non-motorized) only. Access for persons with disabilities will be by walking (or bicycling, non-motorized) or by vehicle with pre-approved authorization when reservations are made. Ingress and egress routes will be predetermined and established for persons with disabilities to aid in mobility to and from designated hunting blinds.

There are 8 spring hunting periods in the State of Minnesota, each lasting 5 days in length generally starting on the 2nd Wednesday of April and ending in late May. Turkey hunts will

coincide with these state seasons. A maximum of 5 hunters per 5 day hunting period will be permitted and they may be accompanied by one non-hunting assistant per hunter. Thus, the maximum number of people during a given 5 day period will be 10. These limitations will minimize disturbance of habitat and other wildlife species. A maximum of 5 portable hunting blinds provided by the Refuge will be setup in advance and placement will be based on many factors including proximity to roads, accessibility, biological concerns, turkey sign and movement patterns, etc. Blind decisions and placement will be decided by several FWS personnel. Hunters and assistants will be restricted to established blinds as well as ingress and egress routes to and from the blind. Access will be limited to minimize disturbance both to flora and fauna and to limit disturbance to these localized areas designated for the turkey hunt.

The following outlines the general details for each proposed specialty hunt:

Spring Turkey Hunt

Who: Youth and hunters with disabilities. The hunt will be offered to both underserved hunter groups and will be determined by a first come first serve basis through an application process with the intent to accommodate both interest groups. A maximum of 5 hunters plus one assistant per hunter per period will be allowed to participate.

What: Spring turkey hunt following State seasons and regulations.

When: The spring season (regulated by the State, described above).

Where: Blind locations will be restricted to three Refuge Units as stated in section 2.1.3. It may change as new lands are acquired in the future.

How: Hunts will be administered by Refuge staff with the help of volunteers, groups, organizations, etc, will plan and coordinate the hunt program.

Deer Hunt

Who: Youth and hunters with disabilities for archery or firearms. The hunt will be offered to either underserved audience and will be determined by a first come first serve basis through an application process with the intent to accommodate both interest groups. A maximum of 15 hunters will be allowed to participate.

What: A 3 day white-tailed deer hunt starting on a Friday and finishing on Sunday. Hunters will abide by State rules and regulations governing deer hunting. The preceding Thursday will be orientation and briefing for hunters, as well as their assistants.

When: The Deer hunt will be conducted during early fall; either the first or second weekend in October.

Where: As directed by the CCP, the hunting area will initially be restricted to 3 Refuge Units that are identified in section 2.1.3. It may change as new lands are acquired in the future.

How: Hunts will be administered by Refuge staff with the help of volunteers, groups, organizations, etc, will plan and coordinate hunt efforts.

2.1.4 Alternative(s) Considered But Not Developed

2.1.4.1 Open entire Refuge (fee title areas) to Deer, and Spring and Fall Turkey Hunting.

Based on current land ownership, opening the entire Refuge to deer, spring and fall turkey hunting would be difficult to manage and regulate. Service land ownership inside the Refuge acquisition boundary is relatively small; the tracts are scattered and interspersed with privately owned land making it difficult to enforce boundaries. The land base presents challenges in offering a high-quality, safe hunt if all of these hunts were permitted.

Table 1. Actions Anticipated for Hunting Alternatives

Action	Alternative 1 (No Action) Hunting is not allowed on the Refuge	Alternative 2 One Special hunt/year offered on the Refuge	Alternative 3 Multiple special hunts/year offered on the Refuge
Species hunted	None	White-tailed deer (firearms)	White-tailed deer (archery and firearms) and Turkey
Compatible with Refuge Goals and Purpose?	Yes	Yes	Yes
A Priority Public Use?	No	Yes	Yes
Audience	None	Persons with disabilities	Youth and disabled
Hunting and Non-hunting Uses Separated?	NA, since hunting isn't offered	Yes, Headquarters Tract will need to be closed to other public uses during hunt	Yes, same as Alternative 2, but for multiple hunts rather than one.
Meets Needs of Public and Partners?	No since hunting is not allowed	Yes, but limited	Yes, more opportunities offered than in Alternative 2

Chapter 3: Affected Environment

3.1 Introduction

Located in central Minnesota, Crane Meadows NWR falls in a transition zone between the northern forests and the mid-continental prairies and is situated on the Anoka Sand Plain only 5 miles from the Mississippi River. The critical and diverse wetland habitats characteristic of the

Upper-Midwest provide important habitat for local and migratory wildlife, maintain essential ecological services, provide an element of water control and flood relief, and offer unique recreation, education, and research opportunities.

Presently, the Service has acquired just over 1,800 acres of the approved 13,540-acre acquisition area. Approximately 900 acres are owned and managed by the state, and the remaining land is privately owned (see Figure 2). The resulting landscape is a mosaic of land ownership and land-use types surrounded predominantly by agriculture.

Of the approximate 1,800 acres Crane Meadows NWR comprises the following habitats:

- 21 acres of wetland (open water)
- 971 acres of wetland
- 289 acres of woodland
- 5 acres of savanna
- 52 acres of lowland forest
- 390 acres of grassland/prairie

The Refuge is home to many native species and serves as a nesting ground and stopover location for several notable migratory bird species including the Greater Sandhill Crane. The Refuge also contains relatively rare habitat types including oak savanna, sand prairie and sedge meadows.

In 1990, a Regional Wetlands Concept Plan was created by the Service for the Midwest Region (Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin) in response to the Emergency Wetlands Resources Act of 1986. Of the 6 sites identified for potential acquisition in Minnesota, the wetland system at Crane Meadows NWR was among the largest and most intact. The report indicated that this area is: "One of the last undisturbed wetland complexes in Central Minnesota. (An) important area for waterfowl, Sandhill Cranes, diverse vegetation communities, and nongame species (FWS, 1990, p. 36)." The report identified an area of 35,000 acres with conservation potential. Subsequently, an environmental assessment was conducted that, in June of 1992, authorized the acquisition of 13,540 acres for a new refuge, Crane Meadows National Wildlife Refuge.

3.2 Climate, Geography and Hydrology

The climate of east-central Minnesota is classified as 'sub-humid continental' and is characterized by significant variations in seasonal temperatures. This region has four distinct seasons with moderate spring and fall temperatures, short, warm summers, and cold, dry winters. The town of Little Falls, Minnesota, near Crane Meadows NWR, has an annual average temperature of 43.4 degrees Fahrenheit.

For all of Morrison County the average temperature during the winter months is approximately 12 degrees Fahrenheit with an average daily minimum of 1 degree. The lowest recorded temperature was minus 41 degrees Fahrenheit on January 9, 1977. Summer temperatures average 68 degrees Fahrenheit with a maximum daily average of 81 degrees. The highest recorded temperature in Little Falls was 101 degrees Fahrenheit on August 18, 1976. There is an average of approximately 136 frost-free days throughout the year, which constitutes the growing season. Frost often persists until mid-May and returns the end of September. The latest occurring frost in the spring is June 9, and the earliest in fall is September 3.

Annual precipitation in Morrison County is well distributed throughout the growing season. Approximately 17.1 inches, or 65 percent of the total annual precipitation, occurs from May through September. The annual average precipitation in Little Falls is 26.3 inches. The heaviest daily rainfall recorded in the county was 4.70 inches in Little Falls on August 1, 1953. Snowfall persists from October through April and occasionally falls in May. The average annual snowfall in Little Falls is 50.4 inches, and snow usually persists on the ground all winter.

Crane Meadows NWR falls within the Platte-Spunk Watershed (MN HUC 7010201) of the Upper Mississippi River Basin. The Upper Mississippi River Basin begins at the headwaters of the Mississippi River, extends southward throughout central Minnesota, and ends near the city of St. Paul, Minnesota. The Platte-Spunk River sub-watershed begins in southern Crow Wing County, runs diagonally northeast to southwest through Morrison County, includes the northwest section of Benton County, and ends in northeast Stearns County. There are approximately 56,000 people and 1,919 farms within the 652,667-acre watershed.

The wetland complex that comprises the majority of Refuge includes two large shallow lakes, Rice Lake (320 acres) and Skunk Lake (314 acres), and one smaller open water basin, Mud Lake (56 acres). The Rice-Skunk Lakes wetland complex is also the confluence of four major waterways: Rice Creek and the Platte River, which flow into Rice Lake from the north, and Skunk and Buckman Creeks, which enter Skunk Lake from the east and southeast and pass through to Rice Lake. The headwaters of these four creeks ultimately pass through the Refuge as well, and include Wolf, Little Mink, and Big Mink Creeks above the Platte River, Hillman Creek above Skunk Creek, and Kuntz and Mischke Creeks above Buckman Creek. In addition to waters that drain through the wetland complex, the southern spur of the Refuge contains the upper reaches of a cold water stream, Little Rock Creek. There are approximately 32 linear miles of stream and river channels within the acquisition boundary that migrate and meander slowly through the wetland complex. In total, the drainage from more than 272,000 acres of upstream land passes through the Refuge. The majority, (256,254 acres or approximately 400 miles) passes directly through the Rice-Skunk Wetland Complex (353:1 watershed to basin ratio) before eventually making its way to the Mississippi River near Rice, Minnesota 8 miles down the Platte River (DNR 2006a). The remaining effective watershed area drains through the Little Rock Creek System and finally drains into the Mississippi River just north of the city of Sartell.

3.3 Natural Resources

3.3.1 Habitats

The Refuge lies within the Anoka Sand Plain Subsection of the Eastern Broadleaf Forest Province of Minnesota. The narrow band of this Province transverses diagonally (from northwest to southwest) across the state, forming a transition zone between tallgrass prairie to the southwest and deciduous forests to the northeast, leading to a distinctive set of vegetative communities. The following habitat types include:

Wetlands and Open Water – The wetland types in this category include: open water, river/stream, emergent marsh, sedge meadow and willow-dogwood shrub swamp. The majority of this category is made up of sedge meadows, followed closely by shrub swamp. Open water is characterized by that portion of lake of wetland with a water depth of >1m and without emergent vegetation (Cowardin et al. 1979). River/stream is a lotic or running waste environment (Goldman and Horne 1983). Emergent marsh is defined as a shallow water wetland with water depths between 20 – 60 inches. These areas are dominated by cattails, bulrushes, and submergent and floating aquatic plants (coontail, milfoil, pondweeds, waterlilies, etc.) floating mats; areas along shorelines of lakes, ponds, rivers, or shallow basins. Sedge meadow is characterized as open wet meadow dominated by sedge, with broad-leaved graminoids and < 25 percent shrub cover. Finally, the willow-dogwood shrub swamp wetland is dominated by broad-leaved graminoids with >25 percent shrub cover. Shrubs include willows, red-osier dogwood, speckled alder and bog birch.

Woodlands – There are three woodland types in this category; oak, oak-aspen and jack pine. The majority of this habitat type (202 acres) in comprised of oak woodland. Oak woodland is defined as dry-mesic hardwood forests; typically deciduous-dominated, but at times mixed deciduous-conifer. Tree species include bur, pin, northern red and white oaks, as well as basswood and American elm. Oak-aspen woodlands are commonly dominated by northern pin oak, with quaking aspen, paper birch big-toothed aspen, bur oak, northern red oak and red pine. Jack pine woodland is a dry-mesic pine or hardwood forest dominated by evergreens (primarily jack pine). Other species may include red pine, quaking aspen, bur oak and northern red oak.

Lowland Forest – The northern floodplain forest is a lowland deciduous riparian forest on the sandy alluvial soils along water courses. Trees in this habitat type are comprised of silver maple, ash, American elm, box elder and basswood.

Oak Savanna – Today, oak savanna is among the world's most threatened plant communities. Small patches totaling approximately 185 acres of a native oak savanna subtype, identified as southern dry savanna, have been retained in the Refuge acquisition area from pre-settlement times. This oak savanna subtype is characterized by a relatively open community of scattered or clumped (25-50 per-cent canopy cover; 5-50 square-feet per acre basal area), short (15-45 feet), open grown bur oak trees that are usually interspersed

with northern pin oak, may have black oak and jack pine components, and with a nearly continuous cover of both prairie and forest forbs and graminoids (Wovcha et al. 1995).

Grasslands/Prairie – The category includes southern dry, southern mesic, and wet prairie habitats. The southern dry prairie is dominated by short grasses and herbaceous vegetation. The southern mesic prairie consists primarily of native warm season grasses and tallgrass prairie species that were planted during restoration efforts; and the wet prairie is characterized by both warm and cool season grasses, sedges, and forbs. These grasslands support a variety of grassland-dependent wildlife species. Prairie habitats throughout North America have also declined significantly due to fire suppression and conversion to agriculture.

3.3.2 Wildlife

The various habitat types of the Refuge supports and diverse assemblage of wildlife species native to central Minnesota described briefly as follows. For a complete list of wildlife species found on Crane Meadows refer to Appendix C in the Refuge CCP.

Birds – The Refuge supports populations of many bird species and attracts more than 200 species with its diverse habitats. The Refuge is important to migratory birds, in particular migratory waterfowl. Over 100 bird species have been recorded to nest in the area. The abundance of wetland habitat attracts a variety of wetland-dependent species to the area including the Greater Sandhill Crane, a bird that was almost completely extirpated from Minnesota by the beginning of the 20th century. Historical records show cranes used Rice and Skunk Lakes in pre-settlement times. The first recorded sighting after extirpation was in 1958. Sandhill Cranes have been recorded every year since, and the area has emerged as one of the most important nesting areas for cranes in central Minnesota, with a current estimate of 40 breeding pairs in the area. The Refuge also serves as a staging ground for thousands of cranes during fall migration

Mammals – The Refuge lies within the known breeding range of 54 mammal species. Of these, 35 species have been confirmed on Refuge lands. Bison and elk were historically present on the landscape, but were extirpated in the early 1900s. The largest mammal that inhabits and breeds on the Refuge is the white-tailed deer. Other large mammals common to the Refuge include coyote, red fox, and on occasion black bear. Gray wolves will occasionally pass through the area, but have not established packs on the Refuge. Other predators on the Refuge include mink, river otter, short-tailed weasel, and badger. Observations of two state special concern species on the Refuge include plains pocket mouse and the prairie vole. Little brown bats and red bats have also been identified on the Refuge. Muskrat, beaver, raccoon, and mink are common in wetland habitat, while uplands harbor a variety of mice, voles, shrews, and ground and tree squirrel species.

Amphibians and Reptiles – Ten species of amphibians and 11 species of reptiles have been documented on the Refuge. Many of these species are dependent on Refuge wetlands,

such as painted turtles, snapping turtles, and tiger salamanders while others, including eastern garter snake, brown snake, eastern and western hognose snake, and gopher (bull) snake, are associated with the upland habitats. The state-listed threatened Blanding's turtle is dependent on both upland and wetland habitats. The eastern gray tree frog, Cope's gray tree frog, wood frog, and western chorus frogs are commonly heard on the Refuge and inhabit wooded areas adjacent to sedge meadows, emergent marshes, or potholes.

Fish – Forty fish species have been identified in lakes and rivers on the Refuge. Some of the game fish species include northern pike, walleye, smallmouth and largemouth bass, bluegill and black crappie. A large population of carp and other roughfish also inhabit the open waters. Species that are indicators of ecosystem health within Refuge waters include redhorse suckers and shiners. Many fish in these areas experience winterkill caused by depletion of oxygen during the winter months. Much of the watershed is restocked naturally from the Mississippi River by way of the Platte River down-stream from the Refuge.

3.3.3 Threatened and Endangered Species

Bald Eagles were federally-listed as endangered and later as threatened, but were delisted on August 9, 2007 and moved to a protected status under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. This species is commonly observed on the Refuge primarily summer through fall, however, they have been observed in the area year round. There currently are three nesting pairs of bald eagles within the Refuge acquisition boundary.

Gray wolves, a federally-listed endangered species, are also currently listed under a threatened status in the state of Minnesota. Wolves do not have any established packs on the Refuge, but intermittently pass through the area.

In 2001, a program was initiated to reintroduce an experimental non-essential population of federally listed endangered Whooping Cranes. The intent was to establish an eastern migratory flock that would summer and breed in central Wisconsin and winter in west-central Florida. On rare occasions, individuals from this experimental population have been observed in the area near Crane Meadows NWR. The mosaic of vegetation communities, mainly the wetland complex at Crane Meadows NWR, can provide essential habitat for this species if the population continues to grow and disperse.

3.4 Cultural Resources

To date, only three prehistoric archaeological sites have been positively identified within the boundaries of the Refuge acquisition boundary. All three are habitation and mound sites containing between 2 and 10 circular burial mounds each. The largest of the mounds is reported to be between 15 and 25 feet high – likely the largest mound in Morrison County. Archaeological research conducted in the habitation areas has revealed that these locations were occupied for at least the last 3,000 years. Two of the mound sites were determined to be so

significant and unique, that they were designated the *Rice Lake Prehistoric District* and listed on the National Register of Historic Places (NRHP) on October 2, 1973.

3.5 Fire Management

3.5.1 Prescribed Fire

Prescribed fire is used on the Refuge as habitat management tool. Nearly all of the Refuge habitats are fire-dependent communities, and the frequency and magnitude of burns have a profound impact on their vitality and health, successional state and the transition from one habitat type to another. Prescribed fire is also a tool used to reduce hazardous fuel loads. Trained and qualified personnel perform all prescribed burns under precise plans. The Refuge has an approved Fire Management Plan that describes in detail how prescribed burning will be conducted. A burn is conducted only if it meets specified criteria for air temperature, fuel moisture, wind direction and velocity, soil moisture, relative humidity, and several other environmental factors. The specified criteria (prescription) minimize the chance that the fire will escape and increase the likelihood that the fire will have the desired effect on plant communities.

How often established units are burned depends on management objectives, historic fire frequency, and funding. The interval between burns may be 2 to 5 years or longer. As part of the prescribed fire program, the Refuge established a monitoring program to verify that objectives are being achieved. Most prescribed burn activities are conducted in the spring so there will be no impact on deer hunting activities that occur in the fall. If a fall burn was considered in the future, safety of deer hunters and other visitors will be priority. An area scheduled for a spring burn will restrict turkey hunting activities and the appropriate precautions will be taken to avoid potential conflicts.

Spot fires and escapes may occur on any prescribed fire. The spot fires and escapes may result from factors that cannot be anticipated during planning. A few small spot fires and escapes on a prescribed burn can usually be controlled by the burn crew. If so, they do not constitute a wildland fire. The burn boss is responsible for evaluating the frequency and severity of spot fires and escapes and, if necessary, slowing down or stopping the burn operation, getting additional help from the Refuge staff, or extinguishing the prescribed burn. If the existing crew cannot control an escaped fire and it is necessary to get help from the Minnesota DNR or other local fire units, the escape will be classified as a wildland fire and controlled accordingly. Once controlled, we will stop the prescribed burning for the burning period.

3.5.2 Fire Prevention and Detection

In any fire management activity, human safety will always take precedence over property and resource protection. Historically, fire influenced the vegetation in and around the Refuge. After Euro-American settlement, however, wildfires were traditionally suppressed. At this day in age, large scale burning without a prescription is likely to cause unwanted damage. In order to minimize that damage, we will seek to prevent and quickly detect fires.

3.5.3 Fire Suppression

We are required by Service Policy to use the Incident Command System (ICS) and firefighters must meet National Wildfire Coordinating Group (NWCG) qualifications for fires occurring on Refuge property. Our suppression efforts will be directed toward safeguarding life while protecting Refuge resources and property from harm. Mutual aid resources responding from Cooperating Agencies will not be required to meet NWCG standards, but must meet the standards of their Agency.

During periods of high fire danger or when the National Preparedness level is V, prescribed fires will not be started without the approval of the Regional Fire Management Coordinator. The Refuge staff has cooperatively worked with the Minnesota Department of Natural Resources, local fire departments and agencies on wildlife suppression especially during these periods of high fire danger. Hunters and their aids will be made aware of high fire precautions. For safety purposes, hunters or their aids will be required to carry a cell phone. Numbers will be exchanged so there may be two way communications. Should an emergency arise we will be able to contact those individuals of any danger. Hunting activities are typically done during early morning or evening when the threat of fire danger is usually lower.

3.6 Economic Resources

National wildlife refuges provide a number of benefits and services to individuals and society as a whole. Some can be tracked fiscally such as expenditures in local communities, payroll, and operations costs, while benefits such as recreation opportunities, species protection, ecosystem services, and environmental education do not come as directly connected with economic values.

According to an assessment of the economic benefits of visitation to national wildlife refuges, in 2004 Crane Meadows NWR had 4,998 (4,498 residents, 500 non-residents) visits for non-consumptive recreational activities; primarily the use of nature trails, observation platforms, wildlife observation in general, and other similar recreation activities. It is estimated that individuals associated with these visits brought approximately $15,600 ($9,300 residents, $6,300 non-residents) in recreation-related expenditures (i.e. food, lodging, transportation, and other expenses) that year to local communities, and that a total benefit of $21,200 and two jobs in final demand were added to the regional economy because of the Refuge (Caudill and Henderson 2005.) In 2010, visitation to the Refuge from non-consumptive users rose to just over 10,000 people. The final demand calculation simply takes actual visitor expenditures and adds benefits gained by those local individuals who earned income from the visitors' activities.

The implementation of the Crane Meadows NWR Hunt Plan is anticipated to have a beneficial impact to the local economy. According to the 2006 U.S. Fish & Wildlife Service report "Banking on Nature," nearby Sherburne NWR generates $1.3 million total economic activity related to Refuge recreational use and 18 jobs for the nearby communities. Hunters coming to the Refuge support the local economy by purchasing hunting licenses, gasoline, food, and miscellaneous hunting merchandise. Some hunters may also come from outside the region utilizing local motels and eating establishments. Because Crane Meadows NWR is in close

vicinity to Sherburne, similar economic stimulus may be generated if hunting opportunities were implemented, but, it would be on a smaller scale because of limited land ownership.

3.7 Recreational Opportunities

The National Wildlife Improvement Act of 1997 established six priority uses of the National Wildlife Refuge System. The uses include hunting, fishing, wildlife observation, wildlife photography, environmental education and environmental interpretation. All but hunting and fishing are a part of current management at Crane Meadows NWR. The Headquarters Unit is currently the only Refuge property with public access and accommodations for public use. The Refuge provides a number of facilities including trails, observation platforms, kiosks, and benches to facilitate wildlife-dependent recreation, and overall visitation for Refuge activities has increased in recent years. Refer to the CCP, Chapter 3 Visitor Services, for a better review of recreational opportunities, programs and events currently offered at the Refuge. For future expectations see Chapter 4 of the Crane Meadow's CCP. A Visitor Services Plan is to be completed within two years of CCP completion.

Chapter 4: Environmental Consequences

This chapter describes the foreseeable environmental consequences of implementing the three Management Alternatives described in Chapter 2. When detailed information is available, a scientific and analytic comparison between alternatives and their anticipated consequences is presented, which is described as "impacts" or "effects." When detailed information is not available, those comparisons are based on the professional judgment and experience of refuge staff and Service and State biologists.

As described in Chapter 2, three alternatives are being considered:

> Alternative A: Current Direction (No Action) – No hunting on the Refuge. Hunting is not allowed on the Refuge since Service land ownership inside the acquisition boundary is relatively small, scattered, and interspersed with privately owned land.
>
> Alternative B: Open Headquarters Unit to a firearms deer hunt for hunters with disabilities. One hunt will be permitted per year.
>
> Alternative C: (Preferred Alternative) – Open a portion of Crane Meadows NWR to special white-tailed deer firearms, white-tailed deer archery, and spring turkey hunts for youth and persons with disabilities.

Hunting activities will initially be permitted, but administratively limited to 3 specified areas (Figure 3, page 17). As additional lands become available, hunting opportunities may be extended to those areas, however, the general framework will still remain the same; to provide a spring turkey hunt and white-tailed deer hunt to youth and hunters with disabilities. 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.

4.1 Effects Common to all Alternatives

Specific environmental and social impacts of implementing each alternative are examined in several broad categories: big game, upland game, migratory birds, threatened and endangered species, habitat, other public use activities and social implications. However, several potential effects will be very similar under each alternative and are summarized below:

4.1.1 Cultural Resources

The Service is charged with the responsibility, under Section 106 of the National Historic Preservation Act of 1966 (NHPA), of identifying historic properties (cultural resources that are potentially eligible for listing on the National Register of Historic Places) that may be affected by our actions.

The Regional Historic Preservation Officer (RHPO) advises the Regional Director about procedures, compliance, and implementation of these and other cultural resource laws. The actual determinations relating to cultural resources are to be made by the RHPO for undertakings on Service fee title lands and for undertakings funded in whole or in part under the direct or indirect jurisdiction of the Service, including those carried out by or on behalf of the Service; those carried out with federal financial assistance; and those requiring a federal permit, license, or approval.

It is the responsibility of the Refuge Manager to identify undertakings that could affect cultural resources and coordinate the subsequent review process as early as possible with the RHPO and state, Tribal, and local officials. Also, the Refuge Manager assists the RHPO by protecting archeological sites and historic properties on Service managed and administered lands, by monitoring archaeological investigations by contractors and permittees, and by reporting ARPA violations.

4.1.2 Environmental Justice

Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations" was signed by President Clinton on February 11, 1994. Its purpose was to focus the attention of federal agencies 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 communities access to public information and participation in matters relating to human health or the environment.

This assessment has not identified any adverse or beneficial effects unique to minority or low-income populations in the affected area. The Proposed Action will not disproportionately place any adverse environmental, economic, social, or health impacts on minority and low-income

populations. Hunting activities that would be offered under each of the alternatives are available to any visitor regardless of race, ethnicity or income level.

The Refuge Recreation Act of 1962 (16 U. S. C. 460K) and the National Wildlife Refuge System Administration Act of 1966 (16 U. S. C. 668-ddee) provide authorization for hunting and fishing on National Wildlife Refuges. The effects of hunting and fishing on refuges have been examined in several environmental review documents, including the Final Environmental Impact Statement on the Operation of the National Wildlife Refuge System (1976), Recommendations on the Management of the National Wildlife Refuge System (1978), and the Draft Environmental Impact Statement on the Management of the National Wildlife Refuges (1988).

The Service owns and administers lands that are part of the NWR System. The Service's primary purpose for these lands is to provide for waterfowl production and ensure the preservation of migratory birds, threatened and endangered species, and resident wildlife. An additional primary purpose established by the Service for these lands is to provide opportunities for the public to hunt, fish, observe and photograph wildlife, and increase public understanding and appreciation of the natural resources.

As stated, public hunting has been allowed for many years by the Service on refuge lands. Public hunting has not resulted in any known significant adverse effects on the Service's management activities. Extensive planning goes into all proposed actions on Service lands. Habitat characteristics, land base size, distribution, species (flora and fauna) present, and management activities are all taken into consideration prior to implementing proposed actions. Public hunting on the Refuge should not adversely impact the Service's management activities on refuge lands.

Potential public use conflicts will be minimized by seeking a balance between the consumptive (hunting) and non-consumptive uses such as wildlife observation, photography, environmental education, and environmental interpretation.

4.2 Alternative A: Current Direction (No Action)

This alternative allows for no hunting on the Refuge; thus, there will be no negative impacts associated with hunting. For this reason, all wildlife species and their habitats may benefit from the No Action Alternative because disturbance will be limited to non-consumptive users and the Refuge will remain a sanctuary for wildlife.

4.2.1 Big Game

No hunting, no impact.

The probability of deer becoming over-populated (due to the lack of hunting) is low since hunting is allowed nearby and on the surrounding landscape. Currently the land base of Refuge fee title areas is relatively small and scattered amongst privately owned and state lands where hunting is permitted.

4.2.2 Upland Game

No hunting, no impact.

4.2.3 Migratory Birds

No hunting, no impact.

4.2.4 Threatened & Endangered Species

No hunting, no impact.

4.2.5 Habitat

No hunting, no impact.

4.2.6 Other Public Use Activities

No hunting, no impact.

4.2.7 Social Implications

Alternative A will not meet the expectation of the public, partners, or other stakeholders to increase hunting opportunities on the Refuge that are compatible to the Refuge purpose. These issues and comments came forth during CCP Scoping Process (refer to Chapter 2 of the CCP for more information). Many individuals stated that hunting was originally discussed during the meetings that led to the establishment of Crane Meadows NWR in 1992, and it has remained a public expectation ever since. However, there are some individuals who expressed maintaining the Refuge as a sanctuary for wildlife during the scoping process. Following the drafting of the CCP, the general consensus of the public was to open the Refuge to some form of hunting.

4.3 Alternative B: Open Headquarters Unit to a Firearms Deer Hunt for Persons with Disabilities

Open the largest contiguous Refuge fee title tract (the Headquarters Unit) to one special white-tailed deer hunt annually to fulfill our obligations covered under the National Wildlife Refuge Administration and the National Wildlife Refuge Improvement Act of 1997. Under this alternative a hunt program will be initiated on Crane Meadows NWR. Service policy directs refuges to provide hunting opportunities when compatible with Refuge management, and offering this use was a long-term goal of the Refuge when it was established in 1992. Managed hunting programs help promote an understanding and appreciation of natural resources and their management. Additionally, managed hunts on the Refuge provide a traditional recreational activity with no definable adverse impacts to the biological integrity or habitat sustainability of Refuge resources.

This type of hunt will be the simplest avenue to pursue. The hunt would be a three day event in early October. The hunt will be consistent with state regulations. Based on current staffing levels this hunt will be possible. Refuge staff would coordinate the program with state, local

sportsmen's clubs, nonprofit organizations and groups who have expressed interest in assisting with special hunt programs.

4.3.1 Big Game

Impacts associated with this Alternative will be similar the Preferred Alternative and are discussed in more detail in 4.4.1. Deer population assessment and harvest statistics are described in section 4.4.1. The hunt under Alternative B will be limited; the location is restricted to one unit of the Refuge and its duration will be restricted to 3 days. A maximum of 15 hunters can participate. This hunt will allow a hunter to harvest one deer of either sex. The maximum harvest permitted will be 15 deer/year. This will have a minuscule impact on the resident deer population and virtually an undetectable impact on the state population.

4.3.2 Upland Game

The deer firearms hunt does not directly impact these species or other residential species. This hunt will be held in the fall when the nesting and brooding season has ended. Hunters may disturb daily activities of resident species but such disturbance will be minimal and temporary.

4.3.3 Migratory Birds

There should be very little to no impact because the hunt will be limited in time, number of people, and location. During the fall season, birds have already nested, fledged and many have migrated through Minnesota prior to the deer season.

4.3.4 Threatened & Endangered Species

There should be minimal, if any adverse impact on these species. There are 3 eagle nests on the Refuge, but none located in the Headquarters Unit where the activity will take place. There should be no impact to gray wolves because of their intermittent and rare dispersion through the Refuge.

4.3.5 Habitat

Conserving and restoring habitat for the benefit of wildlife species is an integral part of any long-range plan for national wildlife refuges. Thus, any public use activity deemed compatible should have no or minimal disturbance to habitat. Walking is the preferred method of travel to access hunting locations; however, other methods of transportation maybe more practical depending on accessibility and the ability of the hunter. Special access accommodations for persons with disabilities will be allowed on a situation basis and approved when reservations are made; but these accommodations will have restrictions to limit adverse impacts to Refuge habitats. No sizeable adverse impacts are expected under this alternative on Refuge habitats.

Additional disturbance to surface soils and vegetation may occur in areas selected for hunting for persons with disabilities. Variables causing disturbance will be controlled, limited to permitted hunting areas, and the anticipated impacts will be minimal. Cutting of sizable vegetation or any

other manipulation near or around hunting blinds or access routes will be done prior to the hunt by Service personnel. All hunters will use permanent blinds set up by Refuge personnel or use portable blinds in pre-approved locations. Therefore, there will be no need for additional vegetation removal or destruction. Ingress and egress points will also be restricted to control access by hunters and their assistants to minimize habitat degradation. The Headquarters Unit has a 3.5 mile trail, with roads and firebreak network already established and these will be used for ingress and egress routes.

Wheeled carts and sleds will be permitted in the select areas for hunting, for hauling deer out. All hunters and their belongings leave the area each day. No ATVs, OHVs or snowmobiles are permitted on the Refuge. Because of these limitations, there are no expected adverse impacts of this alternative on habitats. Damage to vegetation is minimal, temporary and should basically be non-detectable.

4.3.6 Other Public Use Activities

Currently all of the public use activities offered at Crane Meadows NWR are confined to the Headquarters Unit. For safety considerations, the Platte River Trail will be closed for the non-hunting visitors at that time. The trail will be closed a day prior to the hunt, as well as during the hunt. This activity will be advertised prior to the event to avoid any inconvenience to visitors and inform them of the hunt.

This managed hunt will take priority over other public uses in the Headquarters Unit during that period of time. Hunting is one of the six priority wildlife-dependent recreational uses identified in the National Wildlife Refuge System Improvement Act of 1997. Service policy directs us to provide hunting opportunities when compatible with Refuge management, and offering this use was a long-term goal of the Refuge when it was established in 1992. Managed hunting programs help promote an understanding and appreciation of natural resources and their management. Additionally, managed hunts on the Refuge provide a traditional recreational activity with no definable adverse impacts to the biological integrity or habitat sustainability of Refuge resources.

4.3.7 Social Implications

The local public attitude toward deer hunting is positive by the majority of people and is expected to be offered as a public use activity to visitors on the Refuge. During the scoping process for the CCP and subsequent local public meetings, there were a few comments that no hunting should be allowed on a National Wildlife Refuge.

4.4 Alternative C: Open Select Tracts to Deer (archery and firearms) and Spring Turkey Hunting for Persons with Disabilities and Youth

Similar to Alternative B, but additional opportunities will be available. Not only will there be a white-tailed deer hunt for persons with disabilities, but there will be deer hunting opportunities

for youth hunters as well. This white-tailed deer hunt will be for archery or firearm hunters. In addition, a spring turkey hunt consistent with state seasons and regulations will be offered at Crane Meadows for youth hunters and persons with disabilities. The hunts will be conducted on three tracts; the Headquarters (466 acres), Sedge Meadows (386.87 acres), and Platte River WestUnits (272.32 acres).

The limited size and distribution of current Service land ownership of the Refuge continues to limit our ability to offer quality hunting experience opportunities, but management has long understood the demand for, and importance of providing this activity on the Refuge. By beginning with short duration, assisted, managed hunts for specialty groups, Refuge staff can provide hunting opportunities in a controlled fashion, direct these activities to specific audiences, and adaptively evaluate the hunting program for expansion or reduction based on demand and program success.

4.4.1 Big Game

Refuge Deer Population Assessment and Harvest:

The Refuge currently provides limited habitat for white-tailed deer mostly because of the discontinuous state of lands held in fee title; however, suitable deer habitat is present throughout the acquisition boundary. Most of the Service-owned lands are a mosaic of sedge meadow, willow-dogwood shrub swamp, emergent marsh, prairie, oak savanna, floodplain forest, and oak woodland. White-tailed deer are habitat generalist, but will primarily inhabit deciduous forests with interspersed open areas or other habitats that offer ample cover. The diverse array of habitats on the Refuge provides the necessary food, water, and protective cover needed for deer survival.

Deer hunting is a popular activity for local hunters and landowners from the surrounding area. In fact, much of the area which is non-farmed and privately owned within the acquisition Refuge boundary is recreational hunting land. Deer populations are monitored by a combination of harvest data that is used to reconstruct the population, by formal population modeling procedures using harvest data and research on deer reproduction, survival and mortality; and when feasible checked against formal population surveys.

Ideally the number of annual permits issued to hunters is determined by harvestable surplus; or for the most part, by the number of animals that can be harvested without adversely affecting the breeding population. However, in some cases deer populations may be negatively affected by design in order to reduce deer densities. The pre-fawn goal for Permit Area 221 is set for a 25% decline in deer densities over a 5-year period, starting in 2006. This has resulted in liberal regulations with Intensive designation and Early Antlerless Seasons in recent years. Beginning in 2002, the State has formally designated permit areas as Lottery, Managed or Intensive. It has since evolved to include other options such as Early Antlerless Seasons. As deer densities come into line with goals set by the State, then the permit area will be downgraded to Managed or

Lottery depending on circumstances. At present deer densities and high herd fertility, combined with the limited opportunity at Crane Meadows NWR; deer hunting as described under Alternatives B and C on the Refuge will have minimal impacts on the local and permit area-wide deer population. Area-wide designation for PA221 will likely be Managed or Intensive for some years to come unless the population goals change significantly (personal communications with Beau Liddell, Area Wildlife Manager, MN DNR).

Natural predators of white-tailed deer, including gray wolves, black bears, and coyotes, have been observed on, or near the Refuge. At this latitude, however, natural mortality associated with predation is insignificant and does not affect white-tailed deer populations.

The deer density goal for Permit Area 221 was established in 2006. The goal is to manage the pre-fawn population estimate at 9.0 -11.0 deer/square mile. Table 2 provides harvest figures and model density estimates for white-tailed deer in Permit Area 221.

Table 2. White-tailed deer harvest and density figures for the last 10 years for PA 221.

Year	Adult Male	Adult Female	Fawn Male	Fawn Female	Total Harvest	Pre-hunt Density/mi2	Post-hunt Density/mi2	Pre-fawn Density/mi2
2000	1272	907	325	255	2779	18.2	13.4	11.5
2001	1102	747	277	386	2512	17.8	13.4	11.3
2002	1205	959	393	339	2896	19.3	14.2	11.9
2003	1275	1186	443	372	3276	19.9	14.1	12.5
2004	1108	1096	493	436	3133	19.7	14.2	12.4
2005	1119	1032	461	404	3016	19.9	14.6	12.6
2006	1160	1275	512	474	3421	20.4	14.3	12.9
2007	1191	1520	558	531	3800	19.7	13.0	12.7
2008	1055	1057	512	394	3018	17.6	12.2	11.5
2009	1105	1025	452	346	2928	16.7	11.5	10.9

4.4.2 Upland Game

Wild Turkey Population Assessment and Harvest:

The historical range of Wild Turkeys in Minnesota was limited to the extreme southern portion of the state (Leopold 1931, Mosby 1959) and did not include Morrison County, Minnesota. Shortly after European settlement (approximately 1880), turkeys were extirpated from Minnesota because of habitat loss and unregulated hunting. The first successful reintroduction attempt began in 1971 with the release of 29 individuals relocated from Missouri and released in Houston County, Minnesota. The intent of this reintroduction was to establish a viable population in the state that could sustain annual spring and fall hunting seasons (MN DNR 2007). After this reintroduction proved successful, the Minnesota Department of Natural Resources released more birds in suitable habitat in other counties. This trap and transplant program has allowed the Wild Turkey population to expanded its range throughout the entire southern and western portions of the state, including areas north of its historic range (including Morrison County) and what is currently considered the northernmost biological limit for this

species. Wild Turkeys now occupy most of the suitable and available habitat in Minnesota with an estimated population of over 60,000 birds.

Turkey hunting on the Refuge will be limited to designated hunting zones and specific dates to limit conflict with other non-consumptive uses on the Refuge. Hunting will be conducted in accordance with all applicable state and federal regulations. Coordination with Minnesota DNR biologists will provide the population trend information necessary to manage this program long-term. Turkey hunts will be of limited duration, limited to the number of hunters specified by the Refuge hunt plan, and limited to specific zones of the Refuge. Currently, there are 8 spring hunting periods in the state of Minnesota starting on the second Wednesday of April, each period lasting 5 days in length. The bag limit for the disabled turkey hunt on the Refuge will be consistent with state regulations for the spring; one Wild Turkey with a visible beard per hunter. Turkey population estimates indicate that the population within the Refuge can easily sustain a managed harvest without cumulative impacts to the state-wide population. The local turkey population may experience minimal impacts due to the hunts proposed in Alternatives B and C. The Refuge hunts will only contribute a small percentage to the total Wild Turkey harvested in the state.

Through the trap and relocation program organized and administered by the Minnesota DNR, as well as natural population and range expansion, the turkey population has significantly increased throughout Minnesota. The state estimates its turkey population based on harvest records. Within the last 25 years, it has grown to more than 60,000 birds, and the opportunities and demand for turkey hunting have also increased. The state's first turkey hunt, after the initiation of the program, was in 1978. During this hunt, 94 birds were harvested. The annual number of birds harvested has increased ever since. Since 1999 over 5,000 birds have been harvested each spring.

About half of Minnesota is currently open to turkey hunting, and hunts are primarily concentrated in the southern half of the state. Permit Area 221 (within Morrison County) surrounding the Refuge has been open to turkey hunting for many years. Since the year 2003, permits issued in Permit Area 221 have increased almost eleven fold in response to the growing turkey population in the area (Table 3). A fall hunting season was first offered in 2008. At the time the plan was written the fall 2010 harvest data were not available.

Based on annual harvest statistics and a survey by willing deer hunters, the Minnesota DNR uses a model to estimate the turkey populations in each permit area. In 2009, PA 221 supported approximately 1,300 birds and 1,400 birds in 2010 (gobblers comprise approximately 46 percent of the total population.

Table 3. Spring wild turkey harvest in Permit Area (PA) 221. (Crane Meadows NWR is located within PA 221, but there is currently no turkey hunting permitted on the Refuge).

Year	Permit Area	Total Permits Available	Total Permits Issued	Registered Harvest	Success (%)
2010	221	900	819	222 + fall	41
2009	221	680	497	211	42.5
2008	221	360	292	130	44.5
2007	221	200	168	90	53.6
2006	221	160	144	87	60.4
2005	221	160	146	65	44.5
2004	221	120	116	56	48.3
2003	221	75	75	41	54.7

Goals for harvest pressure (set by the State) are to maximize opportunity by increasing permits over time until success rates reach 25-30%. Success usually drops off 5-6 years after beginning to hunt an area. Trend for 221 has proceeded as expected and permits are likely to remain static or increase to approach the 25-30% goal. Turkeys can handle the pressure and permits levels are mainly dictated by interest based on application rates. Another reason permit levels have increased sharply within the last couple of years is because the local area Minnesota DNR Wildlife Office, Little Falls has been receiving increased nuisance and depredation complaints within the Permit Area 221 (personal communication with Beau Liddell, Area Wildlife Manager, MN DNR).

Turkey hunting for hunters with disabilities and youth on the Refuge will follow State guidelines and should there be a detrimental decrease in turkey populations, hunting on the Refuge will be more restrictive or eliminated if necessary.

The bag limit for hunters participating in the Refuge turkey hunt will be consistent with State regulations for the spring; one wild turkey with a visible beard per hunter. The beard is a feathered appendage protruding from the breast and is typically found only on male birds. With a one bird bag limit, the impacts to the wild turkey population on the Refuge will be little to none.

The maximum number of birds harvested on the Refuge will be 40 birds annually. The probability of all hunters taking a bird is low, but if 40 birds are harvested, the local population will experience minimal impacts. If harvest success is similar to Permit Area 221, only about 16 turkeys would be harvested per year. See Cumulative Impacts Analysis section for discussion on regional impacts of populations of wild turkey and statewide harvest statistics.

4.4.3 Migratory Birds

The impacts to non-hunted migratory birds under all Alternatives C are expected to be minimal for the following reasons. The deer hunting season would not coincide with the nesting season. Turkey hunting will be early in the spring before most resident species are nesting, and will be

limited to certain areas of the Refuge, time, and number of participants. For these reasons, there are no anticipated long-term impacts to non-game wildlife by hunting. Disturbance to the daily activities of birds, such as feeding and resting, might occur during the managed deer hunts, but such impacts will be minimal and temporary. Disturbance to birds by hunters would probably be commensurate with that caused by non-consumptive users. Thus, cumulative effects of disturbance to non-hunted migratory birds under the proposed action are expected to be minimal.

4.4.4 Threatened & Endangered Species

Federally listed threatened or endangered species occur infrequently at Crane Meadow NWR. Grey wolves are currently the only federally-listed species with a range that overlaps Crane Meadows NWR. Observations of wolves on the Refuge are limited and those observed are typically considered dispersing individuals. There are no known established packs within the Refuge acquisition boundary, but there are packs nearby (within 20 miles). For this reason, and due to the elusive behavior of wolves, hunters are unlikely to encounter them. An Intra-Service Section 7 evaluation under the Endangered Species Act is attached as an appendix in the final Crane Meadows NWR CCP. It concluded that the proposed action would have no effect on threatened and endangered species on the Refuge, and thus, the cumulative impact on listed species would be minimal.

Currently there are no whooping cranes inhabiting the Refuge. Whooping cranes, however, have been spotted three times in the area over the last 6 years during the spring and fall migration; none of the sightings were in areas being proposed for Alternative C. The sightings were brief; here one day and gone the next. If their occurrence increases in the future, refuge will re-evaluate hunting activities to minimize or eliminate any disturbance.

The spring turkey hunt coincides with nesting season of Bald Eagles. During this time eagles are usually incubating for approximately 35 days. Because it is important to restrict any human activity near active eagle nests during this time, the designated turkey hunting blinds will be established at least 300 meters away from any active eagle nest on the Refuge. To date, the proposed hunting areas do not contain any eagle nests. Trumpeter Swans are also common nesters on the Refuge, but are inhabitants of wetlands, areas that will be avoided by turkey hunters.

4.4.5 Habitat

Similar to Alternative B and discussed in section 4.3.5.

4.4.6 Other Public Use Activities

Impacts are very similar to Alternative B since all other public use activities (non-consumptive) are restricted to the Headquarters Tract. In addition to the deer hunt, turkey hunting will also be allowed on the Headquarters Unit during the spring. The hunts are short in duration so the disruption is minor and temporary.

4.4.7 Social Implications

Impacts similar to Alternative B; plus:

As public use levels at Crane Meadows NWR increase over time, unanticipated conflicts between user groups may occur. The Refuge's visitor use programs would be adjusted as needed to eliminate or minimize conflicts and to continue providing quality wildlife-dependent recreation opportunities. Experience on many national wildlife refuges has proven that time and space zoning (e.g., establishment of separate use areas, use periods, and restrictions on the number of users) is an effective tool in eliminating conflicts between user groups. Overall, the cumulative impact of hunting on other wildlife-dependent recreation at Crane Meadows NWR would be minimal to minor.

Summary of Effects by Alternative

This section describes the environmental consequences of adopting each Refuge management alternative. Table 2 addresses the likely outcomes for specific issues and is organized by broad issue categories.

4.5 Cumulative Impact Analysis

"Cumulative impact" is the term that refers to impacts on the environment that result from the incremental impact of the proposed action when added to other past, present and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such additional actions. Cumulative impacts may result from individually minor but collectively significant actions taking place over a period of time. In this section, the cumulative impacts of the Preferred Alternative C (proposed Action) are fully developed. Alternative A (No Action) cumulative impacts are minimally developed since this has been the case for the last 18 years. Alternative B was not fully developed as this alternative was deemed not preferred, but its impacts would be very similar to those in Alternative C.

4.5.1 Alternative A: Current Direction (No Action)

4.5.1.A. Cumulative Impact of No Hunting on Wildlife Species

In general, if left unchecked deer populations have a tendency to increase to unnatural levels in the absence of the natural abundance of their predators. If the deer population becomes over abundant, it may have profound detrimental impacts to the ecosystem through herbivory. Thus, it is important to monitor deer populations in areas that do not allow harvest and initiate a hunting program following state guidelines on the Refuge. However, the land base managed by the Refuge is relatively small and fragmented; thereby being heavily influenced by the surrounding area where hunting is likely permitted.

4.5.1.B. Cumulative Impact of No Action on Refuge Programs, Facilities, and Cultural Resources

There would be no impact on other Refuge programs, facilities or cultural resources since it is an activity which is not allowed. By not allowing hunting, however, the Refuge is restricting that recreational activity from the six priority wildlife-dependent uses identified in the National Wildlife Improvement Act of 1997.

4.5.1.C. Cumulative Impact of No Action on Refuge Environment and Community

An over population of deer will have negative impacts on the environment. For more details see section 4.5.1.A..

Restricting hunting will not meet the expectations of the majority of the public or partners. A minority of those that provided input want the Refuge to remain closed to hunting, similar to a wildlife sanctuary with little to no disturbance by humans which does not meet the of the Improvement Act of 1997.

4.5.2 Alternative B: Open Headquarters Unit to Deer Hunting for Persons with Disabilities

The Cumulative Impact for Alternative B will not be fully developed in this Environmental Assessment because it is not the Preferred Alternative. However, cumulative impacts associated with Alternative B will be the similar as Alternative C which is described in Section 4.5.3 (accept for discussions about the spring turkey hunt).

4.5.3 Alternative C: Open Select Tracts to Deer Firearms and Archery and Spring Turkey Hunting for Persons with Disabilities and Youth

4.5.3. A. Cumulative Impact of Proposed Hunt on Wildlife Species.

The special hunts that are proposed are limited in time, number of participants, and location.

The state has established a general framework for hunting seasons of resident species and they select season dates, bag limits, and other regulatory options for the hunting seasons. The Refuge may be more conservative or restrictive in their selections than the state frameworks but never more liberal. The proposed hunts will be consistent with states seasons and regulations. Refuge managers have coordinated with state agencies for preapproval of an early firearms deer hunt for persons with disabilities. Season dates and bag limits for National Wildlife Refuges open to hunting are never longer or larger than the state regulations. At Crane Meadows NWR, the proposed hunts will be limited to state seasons and regulations, and will be more conservative. Finally, hunting activities on the Refuge will be; 1) consistent with resource objectives of the Refuge, and 2) supported by yearly state harvest estimates indicating that target species support a harvestable surplus.

Statewide, the number of annual permits issued to hunters is determined by harvestable surplus, or the number of animals that can be harvested without affecting the breeding population. Because of these monitoring activities and state hunting regulations, there will be no cumulative negative impacts on deer abundance and distribution if a deer hunting season is implemented on the Refuge under Alternatives B or C. Natural predators of white-tailed deer, including grey wolves, black bears, and coyotes, have been observed on, or near the Refuge. With the presence of these natural predators and their potential to impact the local and state-wide deer populations, continued annual monitoring will be necessary. Studies in the Midwest have determined that the impacts of predators to deer populations are additive to the existing mortality rate, which includes hunting by humans.

Deer Population

Local (Permit Area 221) Deer Population Assessment and Harvest:

The deer population assessment and harvest statistics for Permit Area 221 are discussed in section 4.4.1.

Regional Deer Population Assessment:

Deer densities continue to increase throughout most of the farmland/transition zone. In central Minnesota, simulated deer densities indicate a slight increasing trend over the last couple years. Efforts to reduce deer in this area may be having an impact on the overall population. Population density estimates in this area were 12 to 16 deer/ mi^2 in 2009 (MN DNR 2010). The goal for permit area 221 is to reduce the deer herd to 9 to 11 deer/mi^2 (refer to section 4.4.1 for more details).

Table 4. Pre-fawn deer densities (deer/mi^2) as simulated from population modeling for each DMU in the Farmland Zone of Minnesota (MN DNR)

DMU	Average Density
Karlstad	6
Crookston	6
Mahnomen	6
Morris	4
Osakis	13
Cambridge	12
Hutchinson	6
Minnesota River	6
Slayton	4
Waseca	5
Rochester	13

Figure 4. DMU subdivisions in Minnesota (MN DNR).

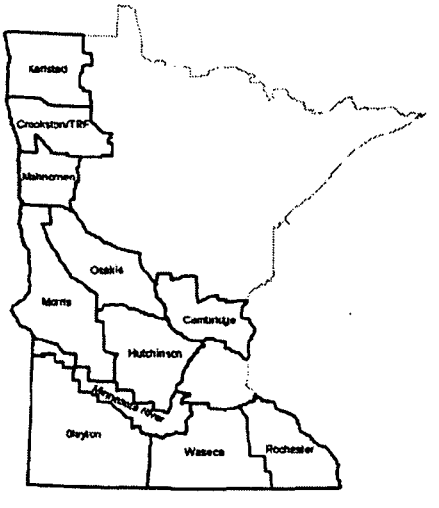


Figure 4. Crane Meadows NWR lies within the Cambridge DMU in Permit Area 221. Detailed long-term trends for the Cambridge DMU can be reviewed in the following table.

Table 5. Long-term trends of pre-fawning deer density in the Cambridge DMU (Grund, 2009).

Permit Area	Area (mi^2)	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
221	642	10	10	11	12	11	12	13	13	12	13	13	12	11	12
222	413	13	13	14	14	14	15	15	14	14	14	13	11	10	15
223	377	10	9	8	11	10	9	11	9	8	11	11	10	11	12
225	618	14	14	15	18	19	16	16	15	13	13	14	14	13	14
227	471	13	13	13	13	12	11	11	10	9	13	14	13	13	15
229	287	5	5	5	6	6	6	7	7	6	7	7	6	7	8
236	372	16	16	17	17	16	17	17	18	18	18	18	18	17	20
Total	3180	12	11	12	13	13	12	13	12	11	13	13	12	12	14
		Average													

Pre-fawning deer densities in 2010 were generally stable or slightly increasing in the Cambridge DMU. However, all Permit Area populations remained well above the goal in 2009. Pre-fawning population densities in 2010 averaged 14 deer per square mile in the Cambridge DMU (SD = 3 deer per square mile).

Deer densities are generally stable or near density goals throughout most of the Farmland Zone in 2009. Pre-fawn deer densities were highest in the Osakis, Rochester, and Cambridge DMUs, lowest in Morris, Waseca, and Slayton, and at intermediate levels in Hutchinson, Minnesota River, Karlstad, Crookston, and Mahnomen (Table 4, Figure 4).

State-wide Deer Population Assessment:

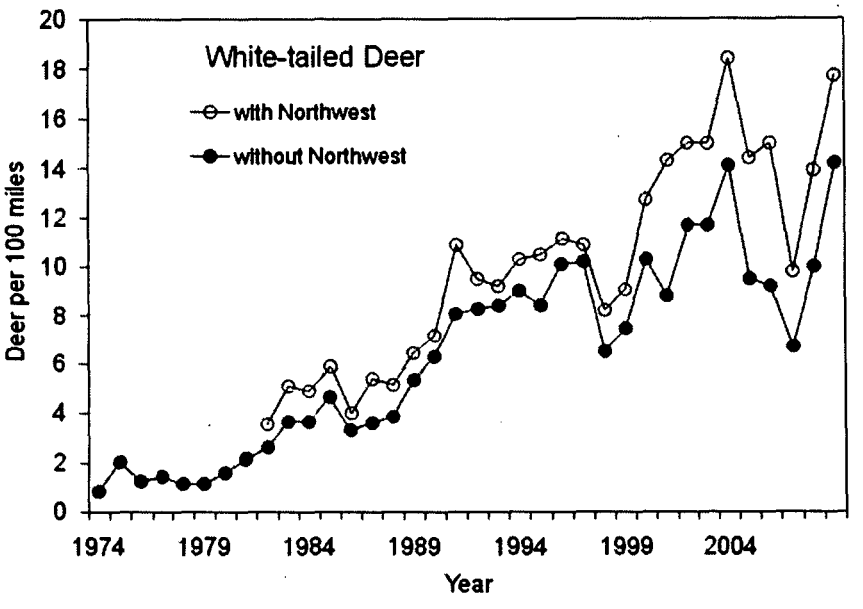
Pre-harvest population estimates range between 900,000 and 1,200,000 deer in Minnesota. Hunting is used as a tool to manage deer populations at acceptable levels that are sustainable and that limit excessive damage to their surrounding environment through herbivory. Each year, Minnesota hunters harvest between 150,000 and 200,000 deer (approximately 17-20% of the population).

2009 Minnesota August Roadside Survey: The index for white-tailed deer (17.8/100 mi) increased by 30% (95% Confidence Interval (CI): 2 to 58%) from last year, and was 31% above the 10-year average (95% CI: 8 to 54%) and 104% above the long-term average (95% CI: 61 to 147%). Among regions, deer indices increased significantly from 2008 only in the Southwest region. Based on this survey, the general trend of the deer population in Minnesota is increasing.

Table 6. State-wide trends (% change) in number white-tailed deer observed per 100 miles driven, Minnesota August roadside survey, 1955-2009 (MN DNR).

Change from 2009[a]					Change from 10-year average				Change from long-term average			
n	2008	2009	%	95% CI	*n*	1999-09	%	95% CI	*n*	LTA	%	95 CI
170	13.7	17.8	30	±28	168	13.7	31	±23	169	8.8	104	±43

Figure 5. Range-wide index of white-tailed deer seen per 100 miles driven. Based on all survey routes completed (MN DNR).

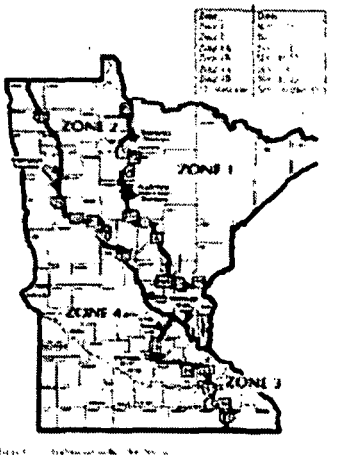


State-wide Deer Harvest Statistics:

Each year, 500,000 hunters harvest between 150,000 and 200,000 deer in Minnesota. In 2009 hunters registered 194,186 deer. 2009 was an average year for harvesting deer.

Table 7. Includes harvest in 2009 for the entire state by zones; SMU 224 lies in the central portion of Zone 2 (

Firearms/Zone	Hunters	Harvest			Overall Success
		Bucks	Antlerless	Total	
1	172,988	34,015	30,570	64,585	33.4%
2	221,221	41,374	37,150	78,524	31.8%
3A	22,873	5,729	4,602	10,331	38.7%
3B	17,405	1,890	4,945	6,835	32.9%
Early Season	11,559	0	2,891	2,891	21.4%
Free Landowner[1]	3,631	0	1,036	1,036	28.5%
Muzzleloader[2]	63,282	2,844	5,085	7,929	11.3%
Archery[3]	99,474	7,650	12,979	20,629	17.5%
TOTAL[4]	**489,096**	**94,367**	**99,819**	**194,186**	33.8%



[1]Includes deer taken during regular firearms, muzzleloader, and archery seasons.

[2]Total number of people who bought only a muzzleloader license was 10,262.

[3]Includes Camp Ripley. Total number of people who bought only an archery license was 28,293

[4]Due to the fact that a hunter can buy multiple licenses, hunter numbers are an estimate.

Cumulative Impacts Summary for Proposed White-tailed Deer Hunting Opportunities at Crane Meadows NWR

Crane Meadows NWR is in the land acquisition phase and contains approximately 1,800 acres in fee title. Deer harvest rates for the deer hunting season will be set jointly each year by MNDNR and Refuge staff based on an annual winter deer survey, harvest rates from previous years, and biological opinion. This annual assessment allows managers to react accordingly to either increase or decrease harvest rates based on deer densities. Crane Meadows NWR will be offering a very limited hunt. With each hunter being successful, the maximum number of deer harvested on the Refuge is 15/year. The hunting opportunity described under Alternatives B and C will have minimal impacts on the local and permit area-wide deer population. Thus, this hunt has a minimum affect on the long-term deer population in this unit and miniscule impact on the state-wide deer population of 1.2 million deer.

Table 8. Cumulative impacts of existing deer hunt in PA 221 (2009 data) and potential deer hunt on the Refuge compared to state-wide harvest.

Hunt Location & Type	Harvest
PA 221 Firearms	2286
PA221 Archery	347
PA 221 Total Harvest	2928
Zone 2	78,524
State-wide Harvest (all types)	194,186

Table 9. State-wide firearms, archery, and muzzleloader harvest, license sales, and success rates 1993-2009 (MN DNR).

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
REGULAR FIREARMS																	
Resident License Sales	426,215	427,343	419,965	389,745	369,190	378,320	395,745	400,814	401,005	367,964	344,875	309,696	291,298	299,774	285,286	376,006	377,077
Non-Resident License Sales	8,498	9,190	9,339	8,535	7,830	8,852	9,970	10,595	10,972	10,835	11,334	12,036	12,523	12,520	12,520	11,883	11,759
Bonus Permit Sales	18,140	19,308	22,603	27,148	32,229	20,884	23,785	34,802	59,013	105,699	194,201	183,186	184,566	167,343	145,522	190,156	140,920
Multi-Zone Buck License Sales	16,881	24,590	29,902	38,806	42,803	44,739	43,903	42,689	41,921	35,658	32,929	32,359	28,233	15,984	15,051	N/A	N/A
Youth License Sales			1,835	2,964	3,844	3,445	2,038	3,215	4,011	2,884	34,463	51,347	50,501	49,599	49,242	50,397	56,678
All Season Deer License Sales								2,384	3,966	22,125	30,998	46,008	59,090	75,511	76,385	N/A	N/A
Total License Sales	469,734	480,879	483,644	467,198	455,896	456,240	475,441	495,289	519,601	545,165	648,800	634,634	626,211	620,731	584,006	628,442	586,434
Registered Buck Harvest[1]	79,463	85,579	88,997	71,242	64,867	82,921	92,584	102,961	98,894	101,333	110,440	116,612	95,594	95,695	97,528	85,646	83,830
Antlerless Permits Offered	236,055	199,950	201,525	154,195	150,195	140,280	177,380	232,595	286,540	365,667	31,625	30,760	28,830	18,925	18,830	32,325	60,100
Antlerless Permits Issued	194,888	164,418	162,761	116,650	105,481	108,016	135,852	180,490	196,603	192,907	25,386	24,111	25,656	18,925	18,830	32,325	60,100
Antlerless Permits App.	262,402	260,086	257,653	174,329	142,260	151,148	214,597	237,571	225,341	202,086	30,253	28,454	31,403	31,403	31,403	31,403	90,882
Registered AL Harvest[1]	108,646	92,704	109,196	68,106	62,038	60,475	71,681	88,492	98,169	102,280	147,420	123,278	119,363	135,981	118,860	98,147	78,525
Registered Total Harvest[1]	188,109	178,283	198,193	139,348	126,905	143,396	164,265	191,453	197,063	203,613	257,860	239,890	214,957	231,676	216,388	183,793	162,345
Registered % Successful[2]	40	37.1	40.1	29.8	27.8	31.4	34.8	38.6	37.9	37.349	39.7	37.8	34.3	37.3	37.1	35.1	32.1
Gun	451,594	461,123	461,041	440,050	423,667	435,356	451,656	459,677	461,895	439,466	454,599	451,448	441,645	453,388	438,484	438,286	445,514
ARCHERY																	
Resident License Sales	69,434	71,409	70,056	67,058	63,499	63,826	66,226	68,947	69,608	57,532	59,339	50,601	50,293	49,595	52,780	87,872	88,707
Non-Resident License Sales	1,128	1,156	1,171	1,098	960	1,029	1,073	1,271	1,288	1,275	1,428	1,144	1,207	1,286	1,509	1,509	1,610
Youth Archery Sales	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3,748	7,261	7,489	7,688	7,663	9,005	9,157
Mgmt Permit License Sales	14,907	13,121	15,387	15,632	17,478	15,846	16,945	20,393	22,141	18,126	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total License Sales	85,469	85,686	86,614	83,788	81,957	80,701	84,244	90,611	93,037	76,933	60,767	59,006	58,989	58,569	61,952	99,033	99,474
Total Harvest - Archery Lic/Bonus	13,722	13,818	14,521	14,338	13,258	12,306	13,376	15,776	15,884	14,744	19,335	17,237	18,975	17,076	17,261	22,632	20,629
Total Harvest - All-Season license											2,356	3,489	4,563	8,264	6,900	N/A	N/A
Total Archery Harvest	13,722	13,818	14,521	14,338	13,258	12,306	13,376	15,776	15,884	14,744	21,691	20,726	23,538	25,360	24,161	22,632	20,629
Registered % Successful[2]	16.1	16.1	16.8	17.1	16.2	15.2	15.8	17.411	17.1	19.2	22.3	29.2	24.6	24.8	24.3	18.5	17.5
MUZZLELOADER																	
Total Muzzleloader License Sales	--	--	--	--	--	--	--	11,972	13,043	11,764	9,142	10,512	9,226	10,781	9,867	64,673	63,282
Estimated All-Season Hunters	--	--	--	--	--	--	--	--	--	--	12,020	14,168	23,293	23,293	26,813	N/A	N/A
Total Muzzleloader Harvest	1,097	1,725	2,452	3,367	3,164	3,152	2,928	4,548	4,494	3,505	9,466	9,289	15,421	13,507	12,138	9,572	7,929
Registered % Successful[2]								37.989	34.5	29.8	44.7	37.6	47.4	39.6	28.2	13.4	11.3
TOTAL Registered Harvest	202,928	193,826	215,166	157,317	143,327	158,854	180,589	211,777	217,452	222,050	290,525	260,604	255,736	270,778	260,434	221,837	194,186

[1]Does not include free landowner licenses

[2]Based on total license sales - does not include all-season deer

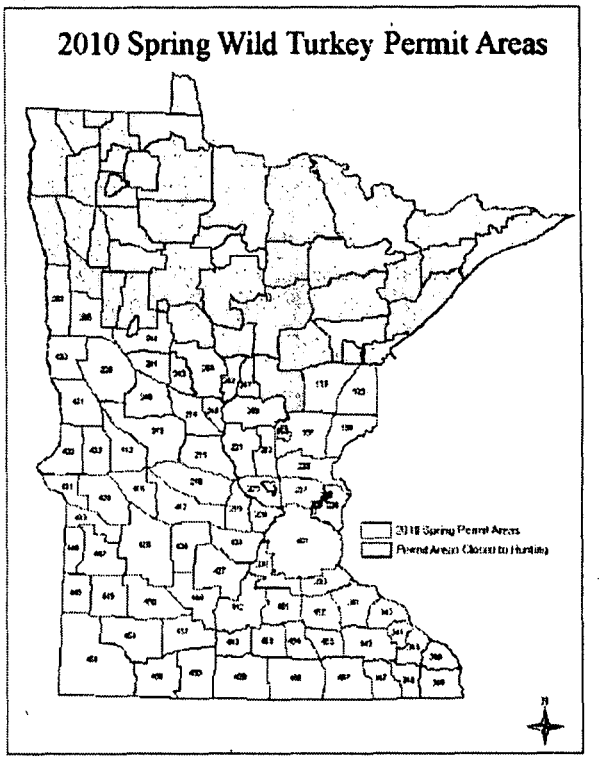
Wild Turkey

Refer to section 4.4.2 for turkey population assessment and harvest information for local levels (Permit Area 221).

State-wide Population Assessment and Harvest:

The Minnesota DNR uses a model based on annual harvest statistics to estimate the turkey population throughout their known range in the state. In 2009, the spring turkey population estimate was approximately 81,373 and 86,400; in 2010 it increased to 86,400. In permit area 221 (the permit area encompassing the Refuge) there were an estimated 1,280 birds in the spring prior to the harvest. This estimate is derived from harvest statistics from the previous year, assuming that the harvest takes approximately 15% of the population.

Figure 6. (MN DNR)



In Minnesota, the spring wild turkey hunting season is designed to regulate harvest and distribute hunting pressure by allocating permits across 77 permit areas (PAs, Figure 6) and 8 time periods using a quota system. Hunters interested in pursuing wild turkeys are required to apply for a permit through a drawing based on a system of preference.

During 2010 51,312 applications were received for 55,982 permits (Table 10, Figure 7). More than 46,500 general lottery, landowner, youth, and surplus permits were issued to hunters, and more than 2,900 additional permits were issued to archers (Table10).

Hunters registered almost 13,500 turkeys, an increase of 10% from 2009 and the highest turkey harvest on record. Hunter success averaged 29%, which is below the 5-year average of 32%. Hunter success by PA ranged from 13% to 40%. Hunter success varied by license type from 7% (archery) to 31% (youth), 36% (general lottery and landowner), and 42% (surplus). Similar to the 10-year average, hunter success rates were highest during the first 2 time periods (Table 11). The majority of general lottery (71%), landowner (92%), and youth (79%) permits were issued during time periods A – D, while the majority of surplus permits (98%) were issued during time periods E – H (Table 11). The 8,490 permits issued to resident and non-resident youth hunters (general lottery, surplus, archery, and mentored) in 2010 was a 69% increase over the 5,024 youth permits issued in 2009. Approximately 10% (1,398) of harvested turkeys were registered using the phone registration system, 12% (1,662) through the internet, and 77% (10,407) at a registration station (MN DNR, 2010).

Figure 7. Trends in turkey hunting applications, permits issued, and turkeys harvested from 1978-2010 (MN DNR).

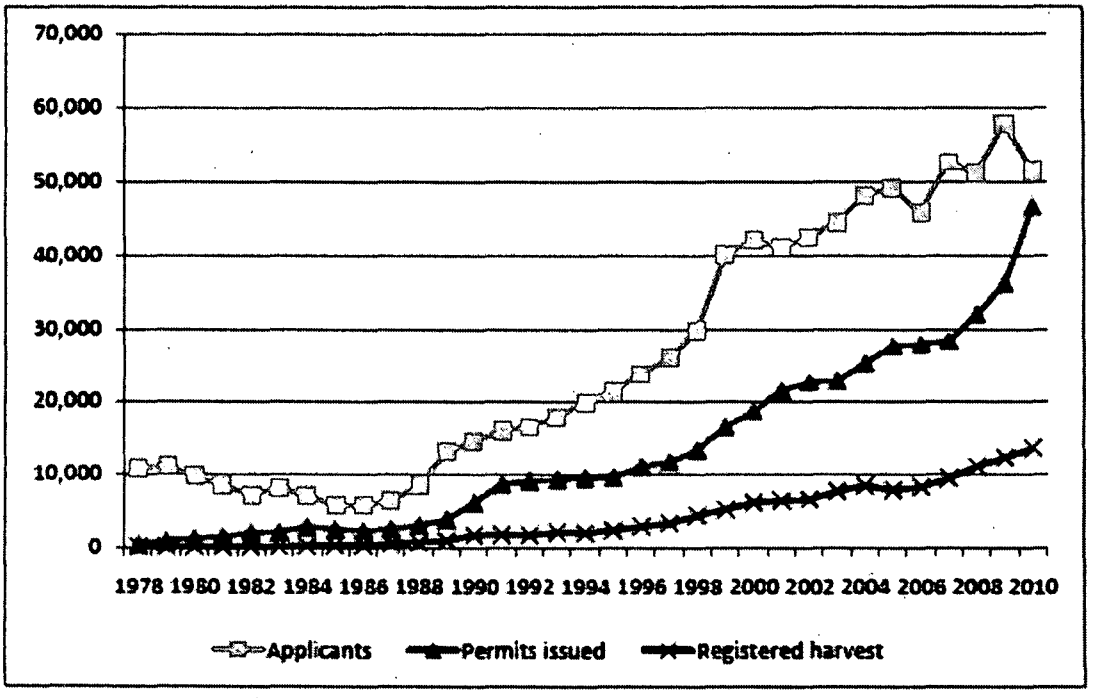


Table 10. Spring applicants, permits available and issued, and registered harvest from 1978-2010 for all spring turkey hunting seasons, Minnesota (MN DNR).

		Permits				
Year	Applicants	Available	Issued	Issued (%)	Registered harvest	Success (%)[a]
1978	10,740	420	411	97.9	94	22.9
1979	11,116	840	827	98.5	116	14.0
1980	9,613	1,200	1,191	99.3	98	8.2
1981	8,398	1,500	1,437	95.8	113	7.9
1982	7,223	2,000	1,992	99.6	106	5.3
1983	8,153	2,100	2,079	99.0	116	5.6
1984	7,123	3,000	2,837	94.6	178	6.3
1985	5,662	2,750	2,449	89.1	323	13.2
1986	5,715	2,500	2,251	90.0	333	14.8
1987	6,361	2,700	2,520	93.3	520	20.6
1988	8,402	3,000	2,994	99.8	674	22.5
1989	13,007	4,000	3,821	95.5	930	24.3
1990	14,326	6,600	6,126	92.8	1,709	27.9
1991	15,918	9,170	8,607	93.9	1,724	20.0
1992	16,401	9,310	9,051	97.2	1,691	18.7
1993	17,800	9,625	9,265	96.3	2,082	22.5
1994	19,853	9,940	9,479	95.4	1,975	20.8
1995	21,345	9,975	9,550	95.7	2,339	24.5
1996	23,757	12,131	10,983	90.5	2,841	25.9
1997	25,958	12,530	11,610	92.7	3,302	28.4
1998	29,727	14,035	13,229	94.3	4,361	33.0
1999	39,957	18,360	16,387	89.3	5,132	31.3
2000	42,022	20,160	18,661	92.6	6,154	33.0
2001	41,048	22,936	21,404	93.3	6,383	29.8
2002	42,415	24,136	22,607	93.7	6,516	28.8
2003	44,415	25,016	22,770	91.0	7,666	33.7
2004	48,059	27,600	25,261	91.5	8,434	33.4
2005	49,181	31,748	27,638	87.1	7,800	28.2
2006	45,704	32,624	27,876	85.4	8,241	29.6
2007[b]	52,566	33,976	28,320	83.4	9,412	33.2
2008[b]	51,000	37,992	31,942	84.1	10,994	34.4
2009[b]	57,692	42,328	36,193	85.5	12,210	33.7
2010[b]	51,312	55,982	46,548[c]	83.0	13,467	29.0

[a] Success rates not adjusted for non-participation
[b] Youth hunt data included
[c] 2,910 permits were issued to archery hunters and are not included in this figure.

Table 11. Permits available and issued, registered harvest, and success (2010 and mean) by time period for the 2010 spring wild turkey season, Minnesota (MN DNR).

	Permits		2010		
Time period[a]	Available	Issued	Registered harvest	Success (%)[b]	2000 – 2009 Mean success (%)
A	5622	7910	3180	40	43
B	5622	5298	1903	36	39
C	5622	6942	2107	30	31
D	5622	6282	1711	27	29
E	5622	5353	1484	28	33
F	5622	4327	898	21	29
G	11125	7085	1502	21	25
H	11125	3254	634	19	24
Youth hunt[c]					
Z		12	7	58	
Camp Ripley[d]					
802A		6	5	83	
801B		33	11	33	
802B		3	1	33	
801C		43	24	56	

[a] A = April 14 – 18, B = April 19 – 23, C = April 24 – 28, D = April 29 – May 3, E = May 4 – 8, F = May 9 – 13, G = May 14 – 20, and H = May 21 – 27
[b] Success rates not adjusted for non-participants
[c] In 2010 mentored youth hunts are coded to time period A due to regulation change which allowed youth hunters to purchase permits over the counter
[d] Disabled veterans hunt

Cumulative Impacts Summary for Proposed Turkey Hunting Opportunities at Crane Meadows NWR

Turkey hunting on the Refuge will be limited in time, number of people, and location to prevent conflict with other non-consumptive uses on the Refuge and to help eliminate any potential cumulative impacts to the environment or other wildlife species. The bag limit for the disabled and youth turkey hunting on the Refuge will be consistent with state regulations for the spring; one Wild Turkey with a visible beard per hunter. Thus, only a maximum of 40 turkeys may be harvested on the Refuge per year. But based on average hunter success rate of 50 percent in Permit Area 221, the probability of bagging the maximum harvest per season is low. If a 50% success rate is applied to the hunt at Crane Meadows NWR, 20 turkeys would be harvested and this accounts for approximately 10 percent of the 2009 harvest (192 birds) and 1.6 percent of the current population in permit area 221.

The turkey population and permits issued in this zone, as well as statewide have increased steadily since 1978 (see figure 7 and 10). Those population estimates and a significant increase in permit availability from the state, indicate that the population within the Refuge can easily sustain this type of managed, limited harvest without cumulative impacts to local or state-wide

populations. The local population may experience minimal impacts and a slight increase in mortality due to Refuge hunts, but it will be miniscule and will only contribute an extremely small percentage of total Wild Turkey harvest in the state. For this reason, the proposed hunt will have no cumulative impacts to the local or state turkey populations.

Other Wildlife Species

The cumulative effects of disturbance to non-hunted species due to deer hunting under Alternative C are expected to be minimal since deer hunting is conducted in the fall of each year and does not coincide with the breeding season.

Cumulative impacts of the proposed turkey hunt to migratory species at the "flyway" level (i.e. Mississippi Flyway) should be negligible. Disturbance by hunting to non-migratory birds, mammals, reptiles, insects, etc. should not have cumulative negative impacts for the following reasons; 1) the overall hunting season and size of hunt (number of people involved) is limited to the spring and a maximum of 10 people per 5-day period (5 hunters plus 5 assistants), 2) turkey hunting is generally a quiet activity, and 3) any potential disturbance will be temporary. Disturbance to these species by hunters would probably be commensurate with that caused by non-consumptive users.

Threatened and Endangered Species

At the time of the completion of the 2010 CCP, Federally listed Threatened Species that occur on Crane Meadows NWR include gray wolves.

Gray Wolves: The potential for cumulative impacts to wolves is unlikely because there are no current packs or breeding pairs inhabiting the Refuge. However, increased human activity during the fall hunting seasons may deter wolves from establishing in the area or traversing through. There is low probability for potential illegal killing of wolves during hunting seasons because wolf sightings on or near the Refuge are rare. Injured animals or carcass remains may provide a food source for any wolves that may be in the area.

4.5.3.B. Cumulative Impact of Proposed Hunt on Refuge Programs, Facilities, and Cultural Resources

Other Refuge Wildlife-Dependent Recreation - The Refuge receives about 10,000 visitors each year. Most of the visitation is from May through October for bird and wildlife observations and Refuge programs. Numbers of observation visitors significantly decrease in November and December. Lowest visitation is through the winter months. There will be overlap with the hunter user group, as well as other user groups on the Headquarters Tract. The Sedge Meadow and Platte River West are not open to wildlife-dependent visitor uses.

Refuge Facilities - The Service defines facilities as: "Real property that serves a particular function(s) such as buildings, roads, utilities, water control structures, raceways, etc." Under the proposed action those facilities most utilized by hunters are roads and parking lots. Any needed

maintenance or improvement of existing roads and parking areas will cause minimal short term impacts to localized soils and may cause some wildlife disturbances and damage to vegetation near Refuge facilities. Facility maintenance and improvements described are periodically conducted to accommodate daily Refuge management operations and general public uses such as wildlife observation and photography. These activities are and will be conducted at times (seasonal and/or daily) to cause the least amount of disturbance to wildlife.

Disturbance by vehicles will be limited to existing roads (Refuge and County roads) and parking lots. Refuge roads and parking lots are regularly used by Service vehicles, visitors, and volunteers throughout the year. Off-road travel will not be permitted. Special access accommodations for persons with disabilities will be allowed on a situation basis, however, these access routes will be established prior to the actual hunt. No adverse impacts are expected on Refuge roads, parking lots, or trails.

Cultural Resources - No site listed on the National Register of Historic Places is located on the Refuge within the proposed hunting area. Hunting, regardless of method or species targeted, is a consumptive activity that does not pose any threat to historic properties on and/or near the Refuge. Hunting meets only one of the two criteria (#2 listed below) used to identify an "undertaking" that triggers a Federal agency's need to comply with Section 106 of the National Historic Preservation Act. These criteria, which are delineated in 36 CFR Part 800, state:

1. an undertaking is any project, activity, or program that can alter the character or use of an archaeological or historic site located within the "area of potential effect;" and

2. the project, activity, or program must also be either funded, sponsored, performed, licenses, or have received assistance from the agency.

Consultation with the pertinent State Historic Preservation Office and federally recognized Tribes are, therefore, not required.

Hunting activities will result in no or little ground disturbance near cultural resources or disturbance to standing structures and will have no effect on any historical properties.

4.5.3.C. Cumulative Impact of Proposed Hunt on Refuge Environment and Community

Because the proposed hunts are limited in time, numbers of people, and location, Refuge personnel expect no adverse impacts of this alternative on the Refuge environment which includes soils, vegetation, air quality, water quality, hydrology, and solitude. Some disturbance to surface soils and vegetation occur; however they are minimal and temporary. Hunting can indirectly benefit vegetation as it is used to keep deer populations in balance with the environment by reducing herbivory, thereby benefiting vegetative communities and associated wildlife species.

The local community and the state of Minnesota, in general, strongly support outdoor activities such as deer hunting. The state has passed legislation ensuring the right of Minnesotan's to hunt.

Impacts to the natural hydrology and air quality will be minimal. The Refuge expects impacts to air and water quality to be very minimal and only due to visitor use of automobiles for transportation. Existing state water quality criteria and regulations on use are adequate to achieve or maintain desired on-Refuge conditions; thus, implementation of this alternative should not have cumulative impacts on the Refuge environment.

The overall impact to the community will be positive. The hunts will be limited and short in duration. These "special hunts" are unique. This may help lighten the negative impression of the non-hunters. Based on the small and fragmented nature of current lands managed by the Refuge, offering special hunting opportunities will meet the expectations of the local community. If conflicts between user groups occur, the Service experience has proven that time and space zoning can be an effective tool in eliminating issues between user groups. These will be handled on a case by case basis. The onsite manager, in consultation with the Project Leader, will determine if such a tool is necessary to limit conflicts.

Managing a hunt program on the Refuge will help promote an understanding and appreciation of natural resources and their management throughout the community. Additionally, managed hunts on the Refuge provide a traditional recreational activity with no definable adverse impacts to the biological integrity of Refuge resources.

4.5.3.D. Other Past, Present, Proposed, and Reasonable Foreseeable Hunts & Anticipated Impacts

As additional land is acquired, Refuge staff will re-evaluate the areas available and safe for hunting. The goal is to provide an additional wildlife-dependent public use on the Refuge and to offer it to as many individuals as possible. On the other hand, safety, compatibility and quality are the priority objectives behind each hunt.

4.5.3.E. Anticipated Impacts if Individual Hunts are Allowed to Accumulate

National Wildlife Refuges have conducted hunting programs within the framework of State and Federal regulations. The protocol is at least as restrictive as the State of Minnesota and in some cases the hunts will be more restrictive. By maintaining hunting regulations that are as, or more, restrictive than the State's, the Refuge ensures it will be maintaining seasons which are supportive of management on a regional basis.

Hunts will always be restricted with respect to duration, areas being opened, and the number of hunters allowed to participant. Each hunt will be planned and well-orchestrated. Wildlife comes first on a National Wildlife Refuge. The hunt program, as well as other visitor use programs will be discontinued if there is any definable adverse impact to the biological integrity or habitat sustainability of Refuge resources.

SECTION 4.6 SUMMARIES OF ENVIRONMENTAL CONSEQUENCES BY ALTERNATIVE

Effect	Alternative A No Action (No Hunting)	Alternative B One Special Hunt/Year	Alternative C (Preferred) Special Hunts on Restricted Area
Habitat	No Effect	Minimal Effect	Minimal Effect
Biological	No Effect	Minimal Effect	Minimal Effect
Listed Species	No Effect	Minimal Effect	Minimal Effect
Historical and Cultural Resources	No Effect	No Effect	No Effect
Cumulative Impacts	No Effect	No Effect	Minimal Effect

CHAPTER 5. LIST OF PREPARERS

Submitted by:

_____ _____

Anne Sittauer
Project Leader

Date

Concur:

_____ _____

Jim Leach
Refuge Supervisor (Area 3)

Date

_____ _____

Rick Schultz
Regional Chief
National Wildlife Refuge System

Date

Approved:

_____ _____

Tom Melius
Regional Director

Date

CHAPTER 6. CONSULTATION AND COORDINATION WITH STAKEHOLDERS

A Comprehensive Conservation Plan (CCP) and Environmental Assessment were completed for Crane Meadows NWR in 2010. Both were prepared in compliance with the National Wildlife Refuge Improvement Act of 1997, the National Policy Act of 1969, and Service policy set forth in the Departmental Manual on National Wildlife Refuge Planning (part 602 FW 1).

Public involvement is a key element of any proper planning. The Service strives to provide as many opportunities for public participation as possible. Subsequently, articles in local newspapers notified citizens and it was placed on the Crane Meadows NWR website. Letters were sent to interested parties including Minnesota DNR representatives, other natural resource professionals, local hunting clubs, disabled veteran organizations, state and local government offices, local media contacts and tribal officials. A listening post for those interested in commenting in person was held December 1 from 2 pm to 6pm. The planning effort benefited from the creative involvement of the public, tribal, state university and federal participants.

This EA will be available for a 30 day public review period in November 15 to December 15, 2010.

- **Meeting with partners.** The Refuge Manager discussed the addition of a limited special hunt program with the general public, the Ojibwe Tribal representatives, Minnesota State Department of Natural Resources, Morrison Natural Resource Conservation, and Soil and Water Conservation District, Sherburne County Commissioners, the Crane Meadows Friends Group, local special interest, sportsman and conservation clubs, and Refuge volunteers.

- **Refuge letters.** Both the Ojibwe Tribe and Minnesota Department of Natural Resources were contacted about the potential for a limited special hunt and were invited to participate or comment for a public meeting in November 2010. Following the public meeting, letters were sent to both agencies requesting comments on the draft Hunting Plan, draft Environmental Assessment, and draft Compatibility Determination.

  In May 2007, consultation letters on the cumulative impacts of turkey hunting were submitted to the Fish & Wildlife Service Regional Biologist. A consultation letter was also submitted to the MN DNR for consultation on the impacts of turkey hunting on the Refuge. FWS and MN DNR personnel concurred that impacts would be minuscule.

- **Contact with Landowners.** The Refuge Manager contacted landowners living adjacent to the Refuge via phone or visit. The purpose was to inform them about the potential to host a turkey and deer hunts in the area and to discuss their concerns.

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APPENDIX

PUBLIC COMMENT ON DRAFT EA AND RESPONSE

Respondent	Comment	Response
Morrison County Commissioner Duane Johnson	Wanted a verbal explanation of proposed hunts and was in support of opening the refuge to hunting	Appreciative of support
Morrison County Commissioner Richard Collins	Wanted a verbal explanation of proposed hunts and was in support of opening the refuge to hunting	Appreciative of support
Morrison County Commissioner Don Meyer	Wanted a verbal explanation of proposed hunts and was in support of opening the refuge to hunting	Appreciative of support
Duane Muncy	Wanted to know if the unit adjacent to his property was proposed to be open for hunting because he could foresee trespass issues. In general supportive of opening the refuge to hunting.	Stated that the Scholan Memorial Unit was not proposed as one of the units open to hunting.

Comments from Minnesota Department of Natural Resources Division of Wildlife

Beau Liddell Area Manager Little Falls, Minnesota

Comment

- Add waterfowl hunting to the Platte River West Unit of Crane Meadows NWR.
- Explained how deer populations are monitored.
- Provided information on harvest strategies and goal setting for deer populations.
- Recommended separating human mortality from predation in cumulative effects sections.

Response

- Waterfowl hunting was not included as an addition to this hunt proposal. The Platte River which is not under the jurisdiction of the Fish and Wildlife Service, is already open to waterfowl hunting. Opening the Platte River West Unit of Crane Meadows NWR to waterfowl hunting would require creating boat access to the Platte River. Because the area suggested is already open to waterfowl hunting and has the potential of creating trespass issues for adjacent landowners the area was not included in this Hunt Plan/ Environmental Assessment.
- Comments describing deer population monitoring was included in the document.
- Comment about deer harvest strategies and goal setting was included in the document.
- Recommendation for separating human mortality from predation was included in the document.