

Glossary

abiotic—Pertaining to nonliving things.

accessible—Pertaining to physical access to areas and activities for people of different abilities, especially those with physical impairments.

adaptive management—Rigorous application of management, research, and monitoring to gain information and experience necessary to assess and modify management activities; a process that uses feedback from research, monitoring, and evaluation of management actions to support or modify objectives and strategies at all planning levels; a process in which policy decisions are implemented within a framework of scientifically driven experiments to test predictions and assumptions inherent in a management plan. Analysis of results helps managers determine whether current management should continue as is or whether it should be modified to achieve desired conditions.

Administration Act—National Wildlife Refuge System Administration Act of 1966.

alternatives—Different sets of objectives and strategies or means of achieving refuge purposes and goals, helping fulfill the Refuge System mission and resolving issues.

amphibian—Class of cold-blooded vertebrates including frogs, toads or salamanders.

annual—A plant that flowers and dies within 1 year of germination.

baseline—Set of critical observations, data, or information used for comparison or a control.

biological control—Reduction in numbers or elimination of unwanted species by the introduction of natural predators, parasites, or diseases.

biological diversity, also biodiversity—Variety of life and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur (“U.S. Fish and Wildlife Service Manual” 052 FW 1.12B). The National Wildlife Refuge System’s focus is on endemic species, biotic communities, and ecological processes.

biological integrity—Composition, structure, and function at the genetic, organism, and community levels consistent with natural conditions and the biological processes that shape genomes, organisms, and communities.

biomass—Total amount of living material, plants and animals, above and below the ground in a particular habitat or area.

biota—Animals and plants of a given region.

biotic—Pertaining to life or living organisms.

breeding habitat—Habitat used by migratory birds or other animals during the breeding season.

buffer zone or buffer strip—Protective land borders around critical habitats or water bodies that reduce runoff and nonpoint source pollution loading; areas created or sustained to lessen the negative effects of land development on animals and plants and their habitats.

canopy—Layer of foliage, generally the uppermost layer, in a vegetative stand; midlevel or understory vegetation in multilayered stands. Canopy closure (also canopy cover) is an estimate of the amount of overhead vegetative cover.

CCP—See comprehensive conservation plan.

CFR—See Code of Federal Regulations.

cfs—Cubic feet per second.

climax—Community that has reached a steady state under a particular set of environmental conditions; a relatively stable plant community; the final stage in ecological succession.

Code of Federal Regulations (CFR)—Codification of the general and permanent rules published in the “Federal Register” by the executive departments and agencies of the Federal Government. Each volume of the CFR is updated once each calendar year.

community—Area or locality in which a group of people resides and shares the same government.

compatible use—Wildlife-dependent recreational use or any other use of a refuge that, in the sound professional judgment of the director of the U.S. Fish and Wildlife Service, will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge (“Draft U.S. Fish and Wildlife Service Manual” 603 FW 3.6). A compatibility determination supports the selection of compatible uses and identified stipulations or limits necessary to ensure compatibility.

complex—See refuge complex.

comprehensive conservation plan (CCP)—A document that describes the desired future conditions of the refuge and provides long-range guidance and management direction for the refuge manager to

accomplish the purposes of the refuge, contribute to the mission of the Refuge System, and to meet other relevant mandates (“Draft U.S. Fish and Wildlife Service Manual” 602 FW 1.5).

concern—See issue.

conservation—Management of natural resources to prevent loss or waste. Management actions may include preservation, restoration, and enhancement.

cool-season grass—Grass that begins growth earlier in the season and often become dormant in the summer; will germinate at lower temperatures (65–85°F). Examples are western wheatgrass, needle and thread, and green needlegrass.

cooperative agreement—Legal instrument used when the principal purpose of the transaction is the transfer of money, property, services or anything of value to a recipient in order to accomplish a public purpose authorized by Federal statute and substantial involvement between the Service and the recipient is anticipated.

coteau—A hilly upland including the divide between two valleys; a divide; the side of a valley.

cover, also cover type, canopy cover—Present vegetation of an area.

CRP—Conservation Reserve Program.

cultivar—A plant variety that has been produced in cultivation by selective breeding.

cultural resources—Remains of sites, structures, or objects used by people in the past.

cultural resource inventory—Professionally conducted study designed to locate and evaluate evidence of cultural resources present within a defined area. Inventories may involve various levels including background literature search (class I), sample inventory of project site distribution and density over a larger area (class II), or comprehensive field examination to identify all exposed physical manifestation of cultural resources (class III).

database—Collection of data arranged for ease and speed of analysis and retrieval, usually computerized.

deciduous—Pertaining to any plant organ or group of organs that is shed annually; perennial plants that are leafless for sometime during the year.

defoliation—Removing of vegetative parts; to strip vegetation of leaves; removal can be caused by weather, mechanical, animals, and fire.

demography—Quantitative analysis of population structure and trend.

dense nesting cover (DNC)—Composition of grasses and forbs that allows for a dense stand of vegetation that protects nesting birds from the view of predators, usually consisting of one to two species of wheatgrass, alfalfa, and sweetclover.

disturbance—Significant alteration of habitat structure or composition. May be natural (for example, fire) or human-caused events (for example, timber harvest).

DNC—See dense nesting cover.

drawdown—Manipulating water levels in an impoundment to allow for the natural drying-out cycle of a wetland.

EA—See environmental assessment.

easement—Agreement by which a landowner gives up or sells one of the rights on his/her property.

ecosystem—Dynamic and interrelating complex of plant and animal communities and their associated nonliving environment; a biological community, together with its environment, functioning as a unit. For administrative purposes, the Service has designated 53 ecosystems covering the United States and its possessions. These ecosystems generally correspond with watershed boundaries and their sizes and ecological complexity vary.

emergent—Plant rooted in shallow water and having most of the vegetative growth above water such as cattail and hardstem bulrush.

endangered species, Federal—Plant or animal species listed under the Endangered Species Act of 1973, as amended, that is in danger of extinction throughout all or a significant portion of its range.

endangered species, State—Plant or animal species in danger of becoming extinct or extirpated in a particular State within the near future if factors contributing to its decline continue. Populations of these species are at critically low levels or their habitats have been degraded or depleted to a significant degree.

endemic species—Plants or animals that occur naturally in a certain region and whose distribution is relatively limited to a particular locality.

environmental assessment (EA)—Concise public document, prepared in compliance with the National Environmental Policy Act, that briefly discusses the purpose and need for an action and alternatives to such action, and provides sufficient evidence and analysis of impacts to determine whether to prepare an environmental impact statement or finding of no significant impact (40 CFR 1508.9).

environmental education—Education aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution.

environmental health—Natural composition, structure, and functioning of the physical, chemical, and other abiotic elements, and the abiotic processes that shape the physical environment.

EO—Executive order.

EPA—Environmental Protection Agency.

extinction—Complete disappearance of a species from the earth; no longer existing.

extirpation—Extinction of a population; complete eradication of a species within a specified area.

- fauna**—All the vertebrate and invertebrate animals of an area.
- Federal land**—Public land owned by the Federal Government, including lands such as national forests, national parks, and national wildlife refuges.
- federally listed species**—Species listed under the Federal Endangered Species Act of 1973, as amended, either as endangered, threatened, or species at risk (formerly candidate species).
- fee title**—Acquisition of most or all of the rights to a tract of land.
- fire regime**—Description of the frequency, severity, and extent of fire that typically occurs in an area or vegetative type.
- flora**—All the plant species of an area.
- FMP**—Fire management plan.
- forb**—A broad-leaved, herbaceous plant; a seed-producing annual, biennial, or perennial plant that does not develop persistent woody tissue but dies down at the end of the growing season.
- forest**—Group of trees with their crown overlapping (generally forming 60–100% cover).
- fragmentation**—The alteration of a large block of habitat that creates isolated patches of the original habitat that are interspersed with a variety of other habitat types; the process of reducing the size and connectivity of habitat patches, making movement of individuals or genetic information between parcels difficult or impossible.
- FTE**—Full-time equivalent.
- geographic information system (GIS)**—Computer system capable of storing and manipulating spatial data; a set of computer hardware and software for analyzing and displaying spatially referenced features (points, lines and polygons) with nongeographic attributes such as species and age.
- GIS**—See geographic information system.
- goal**—Descriptive, open-ended, and often broad statement of desired future conditions that conveys a purpose but does not define measurable units (“Draft U.S. Fish and Wildlife Service Manual” 620 FW 1.5).
- “go-back” prairie**—Previously cultivated cropland that has been allowed to revert to herbaceous cover.
- GPS**—See global positioning system.
- guild**—A group of species that use a common resource base in a similar fashion within an ecological community. A guild can be generally defined (for example, grassland birds) or specifically defined (for example, seed-eating small mammals).
- habitat**—Suite of existing environmental conditions required by an organism for survival and reproduction; the place where an organism typically lives and grows.
- habitat conservation**—Protection of animal or plant habitat to ensure that the use of that habitat by the animal or plant is not altered or reduced.
- habitat disturbance**—Significant alteration of habitat structure or composition; may be natural (for example, wildland fire) or human-caused events (for example, timber harvest and disking).
- habitat type, also vegetation type, cover type**—Land classification system based on the concept of distinct plant associations.
- hemi-marsh**—The emergent phase of a seasonal or semipermanent wetland where the ratio of open water area to emergent vegetation cover is about 50:50, and vegetation and open water areas are highly interspersed.
- herbivore**—Animal feeding on plants.
- herbivory**—The eating of plants, especially ones that are still living.
- impoundment**—A body of water created by collection and confinement within a series of levees or dikes, creating separate management units although not always independent of one another.
- Improvement Act**—National Wildlife Refuge System Improvement Act of 1997.
- integrated pest management**—Methods of managing undesirable species such as invasive plants; education, prevention, physical or mechanical methods of control, biological control, responsible chemical use, and cultural methods.
- interseed**—Mechanical seeding of one or several plant species into existing stands of established vegetation.
- introduced species**—A nonnative plant or animal species that is intentionally or accidentally released into an ecosystem where it was not previously adapted.
- introduction**—Intentional or unintentional escape, release, dissemination, or placement of a species into an ecosystem as a result of human activity.
- invasive plant, also noxious weed**—Species that is nonnative to the ecosystem under consideration and whose introduction causes, or is likely to cause, economic or environmental harm or harm to human health.
- inviolate sanctuary**—Place of refuge or protection where animals and birds may not be hunted.
- issue**—Any unsettled matter that requires a management decision; for example, a Service initiative, opportunity, resource management problem, a threat to the resources of the unit, conflict in uses, public concern, or the presence of an undesirable resource condition (“Draft U.S. Fish and Wildlife Service Manual” 602 FW 1.5).
- lacustrine**—Relating to, formed in, living in, or growing in lakes.
- lek**—A physical area where males of a certain animal species gather to demonstrate their prowess and compete for females before or during the mating season.
- local agencies**—Municipal governments, regional planning commissions, or conservation groups.
- management alternatives**—See alternatives.

management plan—Plan that guides future land management practices on a tract of land. See cooperative agreement.

mean sea level—The sea level halfway between average level of high and low water.

mechanical control—Reduction in numbers or elimination of unwanted species through the use of mechanical equipment such as mowers and clippers.

mesic—Characterized by, relating to, or requiring a moderate amount of moisture; having a moderate rainfall.

microhabitat—Habitat features at a fine scale; often identifies a unique set of local habitat features.

migration—Regular extensive, seasonal movements of birds between their breeding regions and their wintering regions; to pass usually periodically from one region or climate to another for feeding or breeding.

migratory bird—Bird species that follow a seasonal movement from their breeding grounds to their wintering grounds. Waterfowl, shorebirds, raptors, and songbirds are all migratory birds.

migratory game bird—Bird species, regulated under the Migratory Bird Treaty Act and State laws (legally hunted, including ducks, geese, woodcock, and rails).

mission—Succinct statement of purpose or reason for being.

mitigation—Measure designed to counteract an environmental impact or to make an impact less severe.

mixed-grass prairie—Transition zone between the tall-grass prairie and the short-grass prairie dominated by grasses of medium height that are approximately 2–4 feet tall. Soils are not as rich as the tall-grass prairie and moisture levels are less.

monitoring—Process of collecting information to track changes of selected parameters over time.

monotypic—Having only one type or representative.

moraine—Mass of earth and rock debris carried by an advancing glacier and left at its front and side edges as it retreats.

national wildlife refuge (NWR)—Designated area of land, water, or an interest in land or water within the Refuge System, but does not include coordination areas; a complete listing of all units of the Refuge System is in the current “Annual Report of Lands Under Control of the U.S. Fish and Wildlife Service.”

National Wildlife Refuge System (Refuge System)—Various categories of areas administered by the Secretary of the Interior for the conservation of fish and wildlife including species threatened with extinction, all lands, waters, and interests therein administered by the Secretary as wildlife refuges, areas for the protection and conservation of fish and wildlife that are threatened with extinction, wildlife ranges, game ranges, wildlife management areas, and waterfowl production areas.

National Wildlife Refuge System Improvement Act of 1997 (Improvement Act)—Sets the mission and the administrative policy for all refuges in the Refuge System; defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation); establishes a formal process for determining appropriateness and compatibility; establish the responsibilities of the Secretary of the Interior for managing and protecting the Refuge System; requires a comprehensive conservation plan for each refuge by the year 2012. This Act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

native species—Species that, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem.

NAWMP—See North American Waterfowl Management Plan.

Neotropical migrant, also Neotropical migratory bird—Bird species that breeds north of the United States–Mexico border and winters primarily south of this border.

NEPA—National Environmental Policy Act.

nest success—Percentage of nests that successfully hatch one or more eggs of the total number of nests initiated in an area.

nongovernmental organization—Any group that does not include Federal, State, tribal, county, city, town, local, or other governmental entities.

North American Waterfowl Management Plan (NAWMP)—North American Waterfowl Management Plan, signed in 1986, recognizes that the recovery and perpetuation of waterfowl populations depends on restoring wetlands and associated ecosystems throughout the United States and Canada. It established cooperative international efforts and joint ventures composed of individuals; corporations; conservation organizations; and local, State, provincial, and Federal agencies drawn together by common conservation objectives. The Souris River basin refuges are included in the “Prairie Pothole Joint Venture.”

notice of intent—Notice that an environmental impact statement will be prepared and considered (40 CFR 1508.22); published in the “Federal Register.”

noxious weed, also invasive plant—Any living stage (including seeds and reproductive parts) of a parasitic or other plant of a kind that is of foreign origin (new to or not widely prevalent in the U.S.) and can directly or indirectly injure crops, other useful plants, livestock, poultry, other interests of agriculture, including irrigation, navigation, fish and wildlife resources, or public health. According to the Federal Noxious Weed Act (PL 93-639), a

- noxious weed (invasive plant) is one that causes disease or has adverse effects on humans or the human environment and, therefore, is detrimental to the agriculture and commerce of the United States and to public health.
- NRCS**—Natural Resources Conservation Service of the U.S. Department of Agriculture.
- NWR**—See national wildlife refuge.
- NWRS**—See National Wildlife Refuge System.
- objective**—Concise statement of what is to be achieved, when and where it is to be achieved, and who is responsible for the work. Objectives are derived from goals and provide the basis for determining management strategies. Objectives should be attainable, time-specific, and measurable.
- palustrine**—Refers to a nontidal wetland dominated by trees, shrubs, persistent emergents, and emergent mosses or lichens; or a wetland in tidal areas where salinity due to ocean-derived salts is below 0.5 parts per thousand.
- Partners in Flight**—Western Hemisphere program designed to conserve Neotropical migratory birds and officially endorsed by numerous Federal and State agencies and nongovernmental organizations; also known as the Neotropical Migratory Bird Conservation Program.
- partnership**—Contract or agreement entered into by two or more individuals, groups of individuals, organizations or agencies in which each agrees to furnish a part of the capital or some in-kind service, such as labor, for a mutually beneficial enterprise.
- patch**—Area distinct from that around it; an area distinguished from its surroundings by environmental conditions.
- perennial**—Lasting or active through the year or through many years; a plant species that has a life span of more than 2 years.
- phenology**—The relationship between plant or animal development and climatic conditions.
- planning team**—Team that prepares the comprehensive conservation plan. Planning teams are interdisciplinary in membership and function. A team generally consists of a planning team leader; refuge manager and staff biologist; staff specialists or other representatives of Service programs, ecosystems or regional offices; and State partnering wildlife agencies as appropriate.
- planning team leader**—Typically a professional planner or natural resource specialist knowledgeable of the requirements of National Environmental Policy Act and who has planning experience. The planning team leader manages the refuge planning process and ensures compliance with applicable regulatory and policy requirements.
- planning unit**—Single refuge, an ecologically or administratively related refuge complex, or distinct unit of a refuge. The planning unit also may include lands currently outside refuge boundaries.
- plant association**—Classification of plant communities based on the similarity in dominants of all layers of vascular species in a climax community.
- plant community**—Assemblage of plant species unique in its composition; occurs in particular locations under particular influences; a reflection or integration of the environmental influences on the site such as soil, temperature, elevation, solar radiation, slope, aspect, and rainfall; denotes a general kind of climax plant community (ponderosa pine or bunchgrass).
- PPJV**—“Prairie Pothole Joint Venture.”
- predation**—Mode of life in which food is primarily obtained by the killing or consuming of animals.
- prescribed fire**—Skillful application of fire to natural fuels under conditions such as weather, fuel moisture, and soil moisture that allow confinement of the fire to a predetermined area and produces the intensity of heat and rate of spread to accomplish planned benefits to one or more objectives of habitat management, wildlife management, or hazard reduction.
- priority public use**—See wildlife-dependent recreational use.
- pristine**—Typical of original conditions.
- private land**—Land that is owned by a private individual, a group of individuals, or a nongovernmental organization.
- private landowner**—Any individual, group of individuals, or nongovernmental organization that owns land.
- private organization**—Any nongovernmental organization.
- proposed action**—Alternative proposed to best achieve the purpose, vision, and goals of a refuge (contributes to the Refuge System mission, addresses the significant issues, and is consistent with principles of sound fish and wildlife management). The draft comprehensive conservation plan.
- public**—Individuals, organizations, and groups; officials of Federal, State, and local government agencies; Indian tribes; and foreign nations. It may include anyone outside the core planning team. It includes those who may or may not have indicated an interest in Service issues and those who do or do not realize that Service decisions may affect them.
- public involvement**—Process that offers affected and interested individuals and organizations an opportunity to become informed about, and to express their opinions on, Service actions and policies. In the process, these views are studied thoroughly and thoughtful consideration of public views is given in shaping decisions for refuge management.
- public involvement plan**—Broad long-term guidance for involving the public in the comprehensive planning process.
- public land**—Land that is owned by the local, State, or Federal Government.

purpose of the refuge—Purpose specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing authorization or expanding a refuge, refuge unit, or refuge subunit (“Draft U.S. Fish and Wildlife Service Manual” 602 FW 1.5).

refuge complex—A grouping of two or more Service units (for example, national wildlife refuge, wetland management district) that is administered by staff at one of the units.

refuge lands—Lands in which the Service holds full interest in fee title, or partial interest such as limited-interest refuges.

refuge purpose—See purpose of the refuge.

Refuge System—See National Wildlife Refuge System.

region 6—“Mountain-Prairie Region” of the U.S. Fish and Wildlife Service, which administers Service programs in Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Wyoming, and Utah.

rest—Free from biological, mechanical, or chemical manipulation, in reference to refuge lands.

restoration—Artificial manipulation of a habitat to restore it to something close to its natural state. Involves taking a degraded grassland and reestablishing habitat for native plants and animals. Restoration usually involves the planting of native grasses and forbs, and may include shrub removal and prescribed burning.

rhizomatous—A plant having rhizomes— A continuously growing, horizontal, underground stem that produces roots and sends shoots upward at intervals (for example, many iris species).

riparian area or riparian zone—Area or habitat that is transitional from terrestrial to aquatic ecosystems including streams, lakes, wet areas, and adjacent plant communities and their associated soils that have free water at or near the surface; an area whose components are directly or indirectly attributed to the influence of water; of or relating to a river; specifically applied to ecology, “riparian” describes the land immediately adjoining and directly influenced by streams. For example, riparian vegetation includes all plant life growing on the land adjoining a stream and directly influenced by the stream.

runoff—Water from rain, melted snow, or agricultural or landscape irrigation that flows over the land surface into a water body.

sandhills—Sand dunes created by wind and wave action following the melting of large glaciers about 8,000–10,000 years ago. Soils are sand and silt. Local relief exceeds 80 feet in some places.

scoping—Process of obtaining information from the public for input into the planning process.

sediment—Material deposited by water, wind, and glaciers.

Service—See U.S. Fish and Wildlife Service.

shelterbelt—Single to multiple rows of trees and shrubs planted around cropland or buildings to block or slow down the wind.

shorebird—Any of a suborder of birds such as a plover or a snipe that frequent the seashore or mud flat areas.

sound professional judgment—Finding, determination, or decision that is consistent with principles of sound fish and wildlife management and administration, available science and resources, and adherence to the requirements of the National Wildlife Refuge System Administration Act and other applicable laws.

spatial—Relating to, occupying, or having the character of space.

special status species—Plants or animals that have been identified through Federal law, State law, or agency policy as requiring special protection of monitoring. Examples include federally listed endangered, threatened, proposed, or candidate species; State-listed endangered, threatened, candidate, or monitor species; the Service’s species of management concern; and species identified by the Partners in Flight program as being of extreme or moderately high conservation concern.

special use permit—Permit for special authorization from the refuge manager required for any refuge service, facility, privilege, or product of the soil provided at refuge expense and not usually available to the general public through authorizations in Title 50 CFR or other public regulations (“National Wildlife Refuge System Manual” 5 RM 17.6).

species of concern—Those plant and animal species, while not falling under the definition of special status species, that are of management interest by virtue of being Federal trust species such as migratory birds, important game species, or significant keystone species; species that have documented or apparent populations declines, small or restricted populations, or dependence on restricted or vulnerable habitats. Species that: (1) are documented or have apparent population declines; (2) are small or restricted populations; or (3) depend on restricted or vulnerable habitats.

stand—Any homogenous area of vegetation with more or less uniform soils, landform, and vegetation. Typically used to refer to forested areas.

step-down management plan—Plan that provides the details necessary to carry out management strategies identified in the comprehensive conservation plan (“Draft U.S. Fish and Wildlife Service Manual” 602 FW 1.5).

strategy—Specific action, tool, or technique or combination of actions, tools, and techniques used to meet unit objectives (“Draft U.S. Fish and Wildlife Service Manual” 602 FW 1.5).

- submergent**—Vascular or nonvascular hydrophyte, either rooted or nonrooted, that lies entirely beneath the water surface, except for flowering parts in some species.
- succession**—Orderly progression of an area through time from one vegetative community to another in the absence of disturbance. For example, an area may proceed from grass-forb through aspen forest to mixed-conifer forest.
- surficial**—Relating to or occurring on the surface.
- temporarily flooded**—Surface water is present for brief periods during the growing season.
- trust resource**—Resource that, through law or administrative act, is held in trust for the people by the government. A Federal trust resource is one for which trust responsibility is given in part to the Federal Government through Federal legislation or administrative act. Generally, Federal trust resources are those considered to be of national or international importance no matter where they occur, such as endangered species and species such as migratory birds and fish that regularly move across statelines. In addition to species, trust resources include cultural resources protected through Federal historic preservation laws, nationally important and threatened habitats, notably wetlands, navigable waters, and public lands such as State parks and national wildlife refuges.
- trust species**—See trust resource.
- understory**—Any vegetation whose canopy (foliage) is below, or closer to the ground than canopies of other plants.
- upland**—Dry ground; other than wetlands.
- USDA**—U.S. Department of Agriculture.
- U.S. Fish and Wildlife Service (Service, USFWS)**—Principal Federal agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats for the continuing benefit of the American people. The Service manages the 93-million-acre National Wildlife Refuge System composed of more than 530 national wildlife refuges and thousands of waterfowl production areas. It also operates 65 national fish hatcheries and 78 ecological service field stations, the agency enforces Federal wildlife laws, manages migratory bird populations, restores national significant fisheries, conserves and restores wildlife habitat such as wetlands, administers the Endangered Species Act, and helps foreign governments with their conservation efforts. It also oversees the Federal aid program that distributes millions of dollars in excise taxes on fishing and hunting equipment to State wildlife agencies.
- U.S. Fish and Wildlife Service mission**—The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.
- USFWS**—See U.S. Fish and Wildlife Service.
- U.S. Geological Survey (USGS)**—Federal agency whose mission is to provide reliable scientific information to describe and understand the earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.
- USGS**—See U.S. Geological Survey.
- vision statement**—Concise statement of what the planning unit should be, or what the Service hopes to do, based primarily on the Refuge System mission, specific refuge purposes, and other mandates. In addition, the vision statement is tied to the maintenance and restoration of biological integrity, diversity, and environmental health of each refuge and the Refuge System.
- visual obstruction**—Pertaining to the density of a plant community; the height of vegetation that blocks the view of predators and conspecifics to a nest.
- visual obstruction reading (VOR)**—Measurement of the density of a plant community; the height of vegetation that blocks the view of predators to a nest.
- VOR**—See visual obstruction reading.
- wading birds**—Birds having long legs that enable them to wade in shallow water. Includes egrets, great blue herons, black-crowned night-herons, and bitterns.
- warm-season grass**—Grass that begins growth later in the season (early June); require warmer soil temperatures to germinate and actively grow when temperatures are warmer (85–95°F). Examples are Indiangrass, switchgrass, and big bluestem.
- waterfowl**—Category of birds that includes ducks, geese, and swans.
- watershed**—Geographic area within which water drains into a particular river, stream or body of water. A watershed includes both the land and the body of water into which the land drains.
- wetland**—Land transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water.
- wetland easement**—Perpetual agreement entered into by a landowner and the Service. The easement covers only the wetlands specified in the agreement. In return for a single lump-sum payment, the landowner agrees not to drain, burn, level, or fill wetlands covered by the easement.
- wetland management district (WMD)**—Land that the Refuge System acquires with Federal Duck Stamp funds for restoration and management primarily as prairie wetland habitat critical to waterfowl and other wetland birds.
- wilderness**—“A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled

by man, where man himself is a visitor who does not remain” (Wilderness Act of 1964 Section 2c [P.L. 88-577]). This legal definition places wilderness in the “untrammled” or “primeval” end of the environmental modification spectrum. Wilderness is roadless lands, legally classified as component areas of the National Wilderness Preservation System, and managed to protect its qualities of naturalness, solitude, and opportunity for primitive types of recreation. 5,000 contiguous roadless acres or is sufficient in size as to make practicable its preservation and use in an unimpaired condition (“Draft U.S. Fish and Wildlife Service Manual” 610 FW 1.5).

wildfire—Free-burning fire requiring a suppression response; all fire other than prescribed fire that occurs in wildlands (“U.S. Fish and Wildlife Service Manual” 621 FW 1.7).

wildland fire—Every wildland fire is either a wildfire or a prescribed fire (“U.S. Fish and Wildlife Service Manual” 621 FW 1.3).

wildlife-dependent recreational use—Use of a refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation. These are the six priority public uses of the Refuge System as established in the National Wildlife Refuge System Administration Act, as amended. Wildlife-dependent recreational uses, other than the six priority public uses, are those that depend on the presence of wildlife.

wildlife management—Practice of manipulating wildlife populations either directly through regulating the numbers, ages, and sex ratios harvested, or indirectly by providing favorable habitat conditions and alleviating limiting factors.

WMD—See wetland management district.

woodland—Open stands of trees with crowns not usually touching, generally forming 25–60 percent cover.

xerophytic—Pertaining to a plant that needs very little water (adapted to growing in dry habitat).

Appendix A

Compatibility Determinations

A.1 Compatibility Determination for Wildlife Observation and Wildlife Photography

USES

Wildlife observation and wildlife photography.

DISTRICT NAMES

- Huron WMD
- Madison WMD
- Sand Lake WMD

COUNTIES

Beadle, Brookings, Brown, Buffalo, Campbell, Corson, Deuel, Dewey, Edmunds, Faulk, Hamlin, Hand, Hughes, Hyde, Jerauld, Kingsbury, Lake, Miner, McCook, McPherson, Minnehaha, Moody, Potter, Sanborn, Spink, and Sully, South Dakota

ESTABLISHING AND ACQUISITION AUTHORITIES

- Migratory Bird Conservation Act
- Executive Order 5782

WETLAND MANAGEMENT DISTRICT PURPOSES

The districts were created to administer the Small Wetlands Acquisition Program to save wetlands from various threats—particularly drainage. The main authorities in establishment of the program are briefly discussed below:

- *Migratory Bird Hunting and Conservation Stamp Act (16 U.S.C. 718d[c])*—“as waterfowl production areas subject to all provisions of the Migratory Bird Conservation Act ... except the inviolate sanctuary provisions.” The Duck Stamp Act provides for the conservation, protection, and propagation of native species of fish and wildlife, including migratory birds that are threatened with extinction.
- *Migratory Bird Conservation Act (16 U.S.C. 715d[2])*—“for any other management purposes, for migratory birds.” This act addresses the obligations of the United States under the Migratory Bird Treaty Act through the following mechanisms:

- lessening the dangers threatening migratory game birds from drainage and other causes
- the acquisition of areas of land and water to furnish in perpetuity reservations for the adequate protection of such birds
- authorizing appropriations for the establishment of such areas, their maintenance and improvement, and for other purposes

The purpose of the districts is “to assure the long-term viability of the breeding waterfowl population and production through the acquisition and management of waterfowl production areas, while considering the needs of other migratory birds, threatened and endangered species, and other wildlife” (memorandum from Region 6 Assistant Regional Director Richard A. Coleman, December 2006). This purpose statement was developed for all Region 6 wetland management districts. Because the purposes and management capabilities and challenges are similar for the three districts, the Service has elected to address them collectively in this draft CCP and EA.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USES

This use would provide opportunities that support wildlife-dependent recreation. Wildlife observation and wildlife photography would be allowed year-round.

This CCP proposes to continue the above uses and add the following to improve wildlife observation and wildlife photography: update and improve district signs and update existing brochures to the Service’s graphic standards.

The districts would be open for wildlife observation and wildlife photography. Their supporting use (access) would be controlled and regulated through the publication of refuge tear sheets and brochures and through information posted at the kiosks.

Wildlife observation and wildlife photography are two of the six wildlife-dependent, priority public uses

specified in the Improvement Act. These uses and their supporting access-related uses can be allowed at the districts without interfering with the migratory bird resource.

AVAILABILITY OF RESOURCES

Currently, the programs for wildlife observation and wildlife photography are administered using available resources. Implementation of new programs, activities, and facilities outlined in this CCP is tied to funding requests in the form of Refuge Operating Needs System and Service Asset Maintenance Management System projects.

ANTICIPATED IMPACTS OF THE USES

Short-Term Impacts. Temporary disturbance may exist to wildlife near the activity. Direct, short-term impacts may include minor damage from traffic to district roads and trails when wet and muddy, minor damage to vegetation, littering, increased maintenance activity, and potential conflicts with other visitors. These activities would have only minor impacts on wildlife and would not detract from the primary purposes of the districts.

Long-Term Impacts. None.

Cumulative Impacts. There would be no direct or indirect cumulative impacts anticipated with these uses.

PUBLIC REVIEW AND COMMENT

This compatibility determination was prepared concurrently with the draft CCP and EA for the districts. Public review and comment will be achieved concurrently with the public review and comment period for the draft CCP and EA.

DETERMINATION

Wildlife observation and wildlife photography, along with their supporting uses, are compatible uses at Huron WMD, Madison WMD, and Sand Lake WMD.

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY

Stipulations regarding the public use program would be made available in published district brochures. Dates, closed areas, and other information would be specified. Each district would restrict vehicles to designated roads and trails, monitor vehicle use for wildlife disturbance and law enforcement violations, and so forth. It would also monitor use, regulate access, and maintain necessary facilities to prevent habitat degradation and minimize wildlife disturbance.

JUSTIFICATION

Based on the anticipated biological impacts above and in the EA, wildlife observation and wildlife photography on the Huron WMD, Madison WMD, and Sand Lake WMD would not interfere with the habitat goals

and objectives or purposes for which these wetland management districts were established.

Wildlife observation and wildlife photography are priority wildlife-dependent public uses acknowledged in the Improvement Act. These uses promote an appreciation for the natural resources at the refuge. Increased public stewardship will support and complement the Service’s actions in achieving the purposes of the wetland management districts and the mission of the Refuge System.

Submitted

Harris Hoistad Project Leader, Sand Lake National Wildlife Refuge Complex USFWS, Region 6	Date
---	------

Clarke Dirks Project Leader, Huron WMD USFWS, Region 6	Date
--	------

Thomas Tornow Project Leader, Madison WMD USFWS, Region 6	Date
---	------

Review

Paul Cornes Refuge Supervisor USFWS, Region 6	Date
---	------

Approval

Richard A. Coleman, Ph.D. Assistant Regional Director National Wildlife Refuge System USFWS, Region 6	Date
--	------

MANDATORY 15-YEAR REEVALUATION DATE: 2026

A.2 Compatibility Determination for Waterlines on Grassland Easements to Provide Livestock Watering

Use

Waterlines on grassland easements to provide livestock watering.

DISTRICT NAMES

- Arrowwood WMD
- Audubon WMD
- Chase Lake WMD
- Crosby WMD
- Devils Lake WMD
- Huron WMD
- J. Clark Salyer WMD
- Kulm WMD
- Lake Andes WMD
- Long Lake WMD
- Lostwood WMD
- Madison WMD
- Sand Lake WMD
- Tewaukon WMD
- Valley City WMD
- Waubay WMD

COUNTIES

All counties within the districts.

ESTABLISHING AND ACQUISITION AUTHORITIES

- Consolidated Farm and Rural Development Act
- Migratory Bird Conservation Act
- Migratory Bird Hunting and Conservation Stamp Tax
- North American Wetlands Conservation Act
- Emergency Wetlands Resources Act

DISTRICT PURPOSES

“...as Waterfowl Production Areas” subject to” ...all of the provisions of such Act [Migratory Bird Conservation Act] ...except the inviolate sanctuary provisions...” 16 U.S.C. 718(c) (*Migratory Bird Hunting and Conservation Stamp*)

“...for any other management purpose, for migratory birds.” 16 U.S.C. 715d (*Migratory Bird Conservation Act*)

“...for conservation purposes ...” 7 U.S.C. 2002 (*Consolidated Farm and Rural Development Act*)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE

What is the use? Is the use a wildlife-dependent public use? The activity requested involves burying waterlines to provide for livestock watering on areas encumbered by Service grassland easements in North and South Dakota. The buried waterline is a new use of the grassland easement because of the surface grass disturbance that would be considered an economic use. There are approximately 2,500 individual grassland contract holders in the two States. It is estimated that no more than 10 percent or 250 will ever make a request for a buried waterline. In those cases where additional water supplies are provided, there is a better distribution of grazing on the easement tract, and overall health and sustainability of the grass is improved. The waterlines are installed with either a chisel plow or narrow trenching (not exceeding 2 feet) equipment to a depth of 6–8 feet. Minor and very temporary disturbance to the grass is confined to an area no greater than 10 feet on either side of the pipe location. The waterlines are polyethylene pipe of approximately 2 inches in diameter. The disturbance to grass is minimal (generally not exceeding 1 acre of disturbance) in relation to the acreage involved in the easement tract (average 600 acres). The disturbance caused by the trench is immediately restored and with residual and seeded grasses, the activity disturbance is temporary, and within 1–2 years little to no evidence remains of the activity. The activity will be permitted with a SUP and stipulations provided to ensure special and limiting conditions are adhered to and restoration is complete. The waterline will deliver water to a holding tank and gravel pad causing permanent disturbance to grass on an area of approximately 60 feet by 60 feet, representing less than one-tenth of one acre or less than 0.00001 percent of the average grassland easement tract.

Where would the use be conducted? The use will be conducted on grassland easements in all the wetland management districts listed. Generally the grassland easement tracts are native grassland areas that are used predominately for cattle grazing. There will be minimal or nondetected disturbance to wildlife as a result of the activity and what does occur will be very temporary. The disturbance to the average grassland easement tract will represent less than 0.002 percent of the average easement tract.

When would the use be conducted? The use will be conducted as a one time event in the summer season when frost no longer exists and conditions have dried sufficiently to minimize grass disturbance. There is little to no future maintenance.

How would the use be conducted? The activity will be conducted with either trenching equipment (such as a backhoe) or a chisel plow. Disturbance will not exceed 2 feet in width, and it would be less if the chisel plow is used.

Why is this use being proposed? The grassland easement holder will request the use. The request will be made to provide better water availability for improved grass utilization due to more equal grazing distribution. Buried waterlines for livestock watering is a cost-effective and reliable alternative to traditional stock watering dams, especially in times of drought or low precipitation conditions.

AVAILABILITY OF RESOURCES

Resource involved in the administration and management of the use. No additional management or administrative costs will be associated with this activity.

Special equipment, facilities, or improvements necessary to support the use: None

Maintenance costs: None

Monitoring costs: None

Offsetting revenues: None

ANTICIPATED IMPACTS OF THE USE

Short-Term Impacts. There will be only temporary disturbance to the grass from the construction activities, so all impacts will be short-term. In 1–2 years, little to no evidence exists of the activity. There will be no indirect impacts associated with this activity.

Long-Term Impacts. There will be no long-term impacts associated with this activity.

Cumulative Impacts. The only cumulative direct impact will be the loss of grassland from the installation of water holding facilities, estimated to be approximately 360 square feet, representing 0.008 of an acre or 0.00001 percent of the average grassland easement (600 acres). There are no indirect impacts from the proposed activity.

PUBLIC REVIEW AND COMMENT

The period of public review and comment began August 9, 2004 and ended August 13, 2004.

The following methods were used to solicit public review and comment: posted notices in public places

Why was this level of public review and comment selected? The proposed activity is considered minor, incidental, one-time with minimal temporary disturbance.

Summarize comments received and any actions taken or not taken because of comments received. No comments were received.

DETERMINATION

Use is compatible with the following stipulations.

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY

1. Soil, if removed through trenching, will be replaced in the same soil profile as it was removed. Topsoil will be replaced and all soils compacted.
2. Activity will occur during the time when soils are dry and equipment activity will have reduced impact to grasses and soils.
3. Any areas that are disturbed will be reseeded to the appropriate grass mixture if determined necessary for reestablishment by the refuge manager.

JUSTIFICATION

There will be minimal and temporary disturbance to the grassland resources protected by the Service's easement by this activity. The use will not detract from or materially interfere with the mission or purpose of the Refuge System. It is an economic use and as such the activity will benefit the Service mission and purpose through better management of the grassland community by providing improved grazing distribution.

If the proposed use is an economic use of refuge natural resources, how would it contribute to the purposes of the refuge or the mission of the Refuge System? The activity of providing water for livestock grazing will contribute to the mission by providing improved grazing distribution and better range management of the grassland resources protected by the Service's easement.

TEXT OF PUBLIC NOTICE

The U.S. Fish and Wildlife Service (Service) is soliciting public comments on whether to allow buried waterlines to provide for livestock watering on Service Grassland Easements in North and South Dakota. The activity will cause minor and temporary disturbance to the grassland area. Restoration will be ensured through stipulations defined in a Special Use Permit agreed to by the landowner. Through better distribution of livestock grazing the health and sustainability to the grasslands will be better ensured. People wishing to provide comments can do so by August 13th by submitting them to the Wetland Habitat Office, 3425 Miriam Avenue, Bismarck, ND 58501. For more information contact Lloyd Jones at (701) 355-8529.

Submitted

Kim Hanson Arrowwood WMD	Date	Mike Bryant Lake Andes WMD	Date
Mike McEnroe Audubon WMD	Date	Paul VanNingen Long Lake WMD	Date
Mick Erickson Chase Lake WMD	Date	Todd Frerichs Lostwood WMD	Date
Tim Kessler Crosby WMD	Date	Thomas Turnow Madison WMD	Date
Roger Hollevoet Devils Lake WMD	Date	Gene Williams Sand Lake WMD	Date
Harris Hoistad Huron WMD	Date	Jack Lalor Tewaukon WMD	Date
Lee Albright J. Clark Salyer WMD	Date	Cory Richardson Valley City WMD	Date
Bob Vanden Berge Kulm WMD	Date	Larry Martin Waubay WMD	Date

Review

Lloyd Jones
Regional Compatibility Coordinator

Date

Paul Cornes
Refuge Supervisor
USFWS, Region 6

Date

Approval

Richard A. Coleman, Ph.D.
Assistant Regional Director
National Wildlife Refuge System
USFWS, Region 6

Date

**MANDATORY 10- OR 15-YEAR REEVALUATION
DATE: 2019**

A.3 Compatibility Determination for Authorized Health and Safety Requests Associated with Service Wetland Easements Resulting in Only Minor Impacts to the Easement Interest

USE

Requests to resolve a health and safety issue that cannot be resolved by temporary authorization, and which results in only a minor impact to the Service's wetland easement interest. The use, if authorized, will result in non-material impacts to protected wetlands involving partial drainage and/or filling, both of which are acquired interests in the easement wetland.

STATION NAMES

South Dakota Wetland Management Districts and National Wildlife Refuge

- Lake Andes WMD
- Madison WMD
- Huron WMD
- Waubay WMD
- Sand Lake WMD
- Lacreek National Wildlife Refuge

North Dakota Wetland Management Districts

- Tewaukon WMD
- Kulm WMD
- Arrowwood WMD
- Valley City WMD
- Chase Lake WMD
- Audubon WMD
- Long Lake WMD
- J. Clark Salyer WMD
- Devils Lake WMD
- Lostwood WMD
- Crosby WMD

Montana Wetland Management Districts

- Northeast Montana WMD
- Bowdoin WMD
- Benton Lake WMD

- Northwest Montana WMD
- Charles M. Russell WMD

ESTABLISHING AND ACQUISITION AUTHORITIES

Waterfowl Production Areas, Wetland Easements, Grassland Easements

The Migratory Bird Hunting and Conservation Stamp Act, March 16, 1934, (*16 U.S.C. Sec. 718-718h, 48 Stat. 452*) as amended August 1, 1958, (*P.L. 85-585; 72 Stat. 486*) for acquisition of "Waterfowl Production Areas"

The Wetlands Loan Act, October 4, 1961, as amended (*16 U.S.C. 715k-3 - 715k-5, Stat. 813*), funds appropriated under the Wetlands Loan Act are merged with duck stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under the provisions of the Migratory Bird Conservation Act, February 18, 1929, (*16 U.S.C. Sec. 715, 715d - 715r, as amended*)

FmHA deed restricted properties

Consolidated Farm and Rural Development Act (*7 U.S.C. Para. 2002*)

Tallgrass Prairie Tracts

Land and Water Conservation Fund Act of 1965, as amended (*16 U.S.C. 460l-4 through 460l-11*)

DISTRICT AND REFUGE PURPOSES

"...as Waterfowl Production Areas" subject to "...all of the provisions of such Act [Migratory Bird Conservation Act] ...except the inviolate sanctuary provisions..." *16 U.S.C. 718(c) (Migratory Bird Hunting and Conservation Stamp)*

"...for any other management purpose, for migratory birds." *16 U.S.C. 715d (Migratory Bird Conservation Act)*

"...for conservation purposes..." *7 U.S.C. 2002 (Consolidated Farm and Rural Development Act)*

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The Mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE

Wetland management districts frequently receive requests for use or modification of wetlands protected by easement which may affect the Service interest acquired in private property. The uses authorized under

this compatibility determination are related to actions necessary to avert or resolve a health and safety issue involving a Service-protected wetland. Requests may be received by wetland management districts primarily from private property owners who are experiencing difficulties associated with easement-protected wetlands. The Service has wetland easements in every county within the Prairie Pothole Region in the States of North Dakota, South Dakota, and Montana.

Examples of the kinds of requests anticipated under this category include: (1) the possible need to establish a sill elevation on a wetland to lower it slightly to avoid flooding a domestic sanitary system, building, basement, or existing private road; (2) the need to place fill material in a protected wetland to widen a driveway or farm approach to more safely transport equipment and/or loaded grain trucks; or (3) the need to protect a foundation or footing for existing building or grain bins. Lowering a wetland or adding fill to a wetland to remove water from cropland or hayland is not included in this compatibility determination.

All requested uses under this category will be evaluated using the right side of the Easement Permit Flowchart (Health and Safety) to evaluate the requested activity. If the proposal passes through the flowchart as a legitimate health and safety issue, then it becomes a request that the Service will try to honor as a necessary resolution to a hardship which may be caused by the easement wetland.

At times, the requested use may impact Service easement interests. Managers will always try to resolve the issue or situation with temporary measures, meaning that the impact on Service interests will be only a temporary disturbance. If temporary relief measures will not resolve the issue, then a more permanent impact on Service lands or interests will likely result.

Region 6 has defined a “threshold” level of impact that may occur as a result of permitting the requested use but will not materially interfere with, nor detract from, the purposes for which the easement interest was acquired. These levels of impact are defined more fully in the “Justification” section of this compatibility determination, and are based on years of scientific evaluation of prairie pothole-type habitat and how habitat impacts affect migratory bird populations. These threshold levels of potential impact for protected wetlands have been established at 0.4 acres of wetland, not to exceed 25 percent of the wetland basin. These levels have been established based on biological models developed by HAPET in Bismarck, North Dakota.

Threshold levels are not used in conjunction with highway improvement projects or any other activity evaluated by the left side of the flowchart (Public Service, Government or Corporate), so impacts which may result from this category of request will not be evaluated under this compatibility determination.

For this compatibility determination to be used, the use must: (1) be an action necessary to avert a threat to human health and safety or a major threat to public or private property not related to a public service or government-type request, and (2) result in an impact which is at or below the established threshold levels for protected wetlands habitats (see discussion in “Anticipated Impacts of the Use” and “Justification” sections below).

AVAILABILITY OF RESOURCES

Financial and staff resources are sufficient at each field station to administer these requests. Staff time will be needed to evaluate the proposed use, to prepare the site-specific permits, and to ensure compliance with the permit authorization and stipulations, as well as checking for satisfactory restoration of any disturbed sites as necessary.

No specialized equipment will be necessary, as the work requirement associated with these projects is monitoring and compliance checking only. Actual work, including restoration needs if applicable, will be completed by the applicant.

ANTICIPATED IMPACTS OF THE USE

Most of the impacts will result from filling or partially draining parts of protected wetlands, the right to “fill” wetland areas protected by the easement being one of the acquired rights. Partial drainage, another acquired right, may also be authorized to resolve certain health and safety issues, if they cannot be resolved by temporary means.

If the only way to resolve the health and safety issue is to permit a portion of the wetland to be either filled or by lowering the wetland elevation by establishing an overflow sill, then there will be a long-term impact on the wetland. However, the impact would be determined to be below a “material” impact or interference with the purposes of the unit or the mission of the Refuge System as described in “Justification.” These impacts are considered minor with respect to the entire scope of the small wetlands program within the Prairie Pothole Region of Region 6.

Within this compatibility determination, there are no secondary impacts, or at least none which cannot be resolved with stipulations. No complete wetlands are drained or filled (the 25 percent condition), so although potentially reduced in size by 25 percent, or by up to 0.4 acres, the wetland still exists as the same type wetland that originally existed. If the potentially affected wetland contains a colonial bird nesting site or some unique feature, the use may not be allowed, or it may be allowed with stipulations that would eliminate the secondary or indirect impact.

The Region 6 States of North Dakota, South Dakota, and Montana have over 15,000 wetland easement contracts comprising over 1.2 million acres of wetlands. It

is anticipated that between 5 and 10 requests annually may be received to allow partial drainage or filling of protected wetlands. Cumulative impacts under this scenario may include up to 4 acres of impact annually out of 1.2 million acres of protected wetlands.

If multiple requests are received from the same landowner, each request will be evaluated on its own merit. Each easement contract may be authorized up to one threshold level of impact in total, whether it occurs all at one time, or in different authorizations. Therefore, only up to 0.4 acres of potential wetland impact may be authorized for each easement contract for resolution of legitimate health and safety issues, or for other authorized uses.

PUBLIC REVIEW AND COMMENT

The period of public review and comment began _____ and ended _____.

Posted notices were made in public places for each of the field stations listed on this compatibility determination.

DETERMINATION

Compatibility Threshold. Material interference or detracting from the purposes and/or mission of the Refuge System.

Authorized health and safety requests associated with Service wetland easements resulting in only minor impacts to the easement interest are compatible uses at Lake Andes WMD, Madison WMD, Huron WMD, Waubay WMD, Sand Lake WMD, Lacreek National Wildlife Refuge, Tewaukon WMD, Kulm WMD, Arrowwood WMD, Valley City WMD, Chase Lake WMD, Audubon WMD, Long Lake WMD, J. Clark Salyer WMD, Devils Lake WMD, Lostwood WMD, Crosby WMD, Northeast Montana WMD, Bowdoin WMD, Benton Lake WMD, Northwest Montana WMD, and Charles M. Russell WMD.

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY

1. Issuance of a permit does not preclude the requirements for obtaining necessary permits and/or approvals from other county, State, or Federal agencies and from local landowners.
2. The permit is issued subject to the revocation and appeals procedure contained in Title 50, Part 25 of the CFR.
3. Regardless of the authorized threshold level, the permit will require the least amount of impact on the Service easement interest as is necessary to resolve the health and safety issue.
4. If the requested use passes the flowchart and is authorized, and results in minor impacts which are more than temporary, then the use will be subject to the terms and conditions of the easement permit.

5. If past authorizations for any reason have been granted for this easement, then the manager cannot authorize any use that will exceed the aggregate total authorization of 0.4 acres of wetland impact, including the past authorizations.
6. Site-specific stipulations may be added to the permit to address resolution of any potential secondary impacts.

JUSTIFICATION

The administration of the Service easement program in Region 6 requires managers to make decisions regarding requested uses of private lands encumbered by Service easement interests. Managers will use the Easement Permit Request Flowchart to determine if the requested use should be authorized. If the requested use is authorized, then this compatibility determination will be used for the requests that have passed through the evaluation process and that fall within the established levels of impact authorized for easement wetlands to approve means to resolve legitimate health and safety issues. It is anticipated that no more than 5–10 authorizations will be granted each year for the entire Prairie Pothole Region portion of Region 6 (North Dakota, South Dakota, Montana) that would require the use of this compatibility determination. Once again, the compatibility determination will only be used if temporary means cannot be used to resolve the issue.

Data provided by HAPET have been used to predict the effect to waterfowl resources resulting from impacts to wetlands. When these habitat impacts occur on lands protected by Service easements, then a determination must be made as to whether these impacts represent a material interference or detracting from the purposes for which the easement area was established or from the mission of the Refuge System.

With the HAPET information about how waterfowl populations respond to habitat changes within the Prairie Pothole Region, managers may now use applied science and compelling data to quantify impacts resulting from wetland-altering activities—whereas before, they were using only a judgment. The level of wetland impact which corresponds with a “non-material” impact (as portrayed under compatibility standards) is defined as one pair of ducks, the lowest whole unit and functional common denominator.

The impacts of wetland loss on breeding duck pairs (that is, mallard, northern pintail, gadwall, blue-winged teal, and northern shoveler, which together compose approximately 90 percent of the breeding ducks in North and South Dakota) were evaluated using models developed with data collected by the Service during the annual Four Square Mile Breeding Waterfowl Population Survey. HAPET applied the models to all wetlands mapped by the National Wetland Inventory to predict the average number of

breeding duck pairs attracted to each wetland for 13 years (1987–1999) of the Four Square Mile Breeding Waterfowl Population Survey. Results indicate that temporary and seasonal wetlands, on average, attract about one duck pair per acre; while semipermanent wetlands attract about one pair for every 1.5 wetland acres. While the average breeding pair densities are as identified above, the highest density occurring on a single wetland district for a single class of wetlands was 1.98 pairs per acre or one pair for 0.5 acres (Sand Lake–temporary wetlands). These estimates can be used as a foundation for identifying non-material levels of impact on wetlands. Wetland impacts that result in affecting less than one pair of breeding ducks is below a “material” impact relative to compatibility.

Even though the overall average for all classes of wetlands for all wetland management districts is approximately one pair of ducks for each wetland acre, and the highest density encountered is one pair per 0.5 acres, this proposal is to ensure that any authorized use resulting in a wetland impact will not result in the loss of one whole pair of ducks on the landscape, regardless of where it is within the Region 6 Prairie Pothole Region, and which class of wetland is affected. Therefore, the proposal to use 0.4 acres as the upper limit of impact to achieve compatibility inherently builds in an additional 20 percent margin of safety.

In addition, it is further determined that impacts must be less than 25 percent of the affected basin to be within these threshold criteria. This recommendation, combined with the wetland and duck pair relationship information provided by HAPET and outlined above, suggests that a wetland impact of 0.4 acres or less, and not including more than 25 percent of the wetland basin, will not materially interfere with nor detract from the purposes for which the wetland easement was acquired, nor will it detract from the mission of the Refuge System.

The not-to-exceed threshold levels of impact to easement-protected wetlands which are necessary to ensure compatibility are 0.4 acres or less, and not over 25 percent of the wetland basin. These levels were selected because of the following: (1) they result in built-in margins of safety (80 percent) from the actual figures determined by HAPET; (2) the represented levels are based on the best available science, the pair-wetland relationship model developed by HAPET and the Mallard Model, as well as many years of collected data from nearly the entire Prairie Pothole Region within Region 6; the threshold levels of impact represent a biologically meaningful measure (that is, one pair of ducks); the levels establish a consistent, science-based method for managers to use when evaluating compatibility of proposed uses for less than fee-title land interests.

Submitted

Michael Bryant, Project Leader Lake Andes WMD	Date
--	------

Tom Tornow, Project Leader Madison WMD	Date
---	------

Clarke Dirks, Project Leader Huron WMD	Date
---	------

Larry Martin, Project Leader Waubay WMD	Date
--	------

Harris Hoistad, Project Leader Sand Lake WMD	Date
---	------

Brian DeVries, Project Leader Lacreek National Wildlife Refuge	Date
---	------

Rob Bundy, Acting Project Leader Tewaukon WMD	Date
--	------

Mike Erickson, Project Leader Kulm WMD	Date
---	------

Kim D. Hanson, Project Leader Date
 Arrowwood WMD
 Chase Lake WMD
 Valley City WMD

Kathy Burchett, Project Leader Date
 Benton Lake WMD

Lloyd Jones, Project Leader Date
 Audubon WMD

Jeff King, Project Leader Date
 Northwest Montana WMD

Paul Van Ningen, Project Leader Date
 Long Lake WMD

Kathy Burchett, Project Leader Date
 Northwest Montana Flathead County WMD

Kelly Hogan, Project Leader Date
 J. Clark Salyer WMD

Rick Potts, Project Leader Date
 Charles M. Russell WMD

Review

Roger Hollevoet, Project Leader Date
 Devils Lake WMD

Lloyd Jones Date
 Regional Compatibility Coordinator

Dave Gillund, Project Leader Date
 Lostwood WMD
 Crosby WMD

Paul Cornes Date
 Refuge Supervisor
 USFWS, Region 6

Jerry Rodriguez, Project Leader Date
 Northeast Montana WMD

Dean Rundle Date
 Refuge Supervisor
 USFWS, Region 6

Carmen Luna, Project Leader Date
 Bowdoin WMD

Approval

Richard A. Coleman, Ph.D.
Assistant Regional Director
National Wildlife Refuge System
USFWS, Region 6

Date

MANDATORY 10-YEAR REEVALUATION DATE

10 years from the date of approval signature.

Enter Reevaluation Date: _____

A.4 Compatibility Determination for Glyphosate-Tolerant Soybeans and Corn for Habitat Restoration and Management on National Wildlife Refuge System (System) Owned or Managed Lands in Region 6

USE

Use of glyphosate-tolerant soybeans and corn for habitat restoration and management on National Wildlife Refuge System (System) owned or managed lands in Region 6.

REFUGE NAME

- Arrowwood Complex
- Audubon Complex
- Devils Lake Complex
- Flint Hills National Wildlife Refuge
- Huron Wetland Management District
- Kirwin National Wildlife Refuge
- Kulm Wetland Management District
- Lake Andes Complex
- Long Lake Complex
- Madison Wetland Management District
- Marais des Cygnes National Wildlife Refuge
- Quivira National Wildlife Refuge
- Rainwater Basin Wetland Management District
- Souris River Basin Complex
- Sand Lake Complex
- Tewaukon Complex
- Waubay Complex

COUNTIES

All counties within national wildlife refuges and wetland management districts listed above in Region 6.

ESTABLISHING AND ACQUISITION AUTHORITIES

System lands are managed consistent with a number of federal statutes, regulations, policies, and other guidance. The National Wildlife Refuge System Administration Act of 1966, as amended (16 United States

Code [U.S.C.] 668dd–668ee) (Administration Act) is the core statute guiding management of the System.

The National Wildlife Refuge System Improvement Act of 1997 (Public Law [P.L.] 105-57) made important amendments to the Administration Act, one of which was the mandate that a comprehensive conservation plan be completed for every unit of the System. Among other things, comprehensive conservation planning has required field stations to assess their current farming program and establish objectives for the future.

The Migratory Bird Hunting Stamp Act of March 16, 1934, as amended by section 3 of the Act of August 1, 1958 (72 Stat. 486, 16 U.S.C. sec. 716 d[c]), authorized the Secretary of Interior to acquire small wetland or pothole areas suitable as Waterfowl Production Areas.

Additional Authorities include the following: Consolidated Farm and Rural Development Act, Migratory Bird Conservation Act, North American Wetlands Conservation Act, and the Emergency Wetlands Resources Act.

REFUGE PURPOSES

- As “a refuge and breeding ground for migratory birds and other wildlife, for use as an inviolate sanctuary, or for any other management purpose for migratory birds.” *Migratory Bird Conservation Act*
- As “Waterfowl Production Areas” subject to “[...] all of the provisions of such Act [*Migratory Bird Conservation Act*] [...] except the inviolate sanctuary provisions.” 16 U.S.C. 718(c) *Migratory Bird Hunting and Conservation Stamp*
- For “any other management purpose, for migratory birds.” 16 U.S.C. sec. 715d *Migratory Bird Conservation Act*
- For “conservation purposes [...]” 7 U.S.C. sec. 2002 *Consolidated Farm and Rural Development Act*

Establishing Authorities and Refuge Purposes for individual Units may be obtained online at www.fws.gov/refuges/policiesandbudget/purposes/Purposes_Search.cfm.

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE

What is the use? Is the use a wildlife-dependent public use? The use is as follows: use of glyphosate-tolerant corn and soybeans for habitat restoration and

management purposes on lands owned in fee title or managed through agreement by the National Wildlife Refuge System in Region 6. The primary use will be to prepare a seedbed on previously or currently cropped sites for prairie reconstruction purposes. An additional use would include incorporation into a station's integrated pest management program for the control of invasive and noxious plant species. An example would be use on System-managed lands behind flood control dams where prairie restoration would not be warranted due to the likelihood of future flooding.

The use is not a wildlife-dependent public use.

Where would the use be conducted? The use would be conducted on lands owned in fee title or managed through agreement by the System in Region 6, in Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming, that are currently farmed or have previously been farmed and contain soils and receive average precipitation to support growth of agricultural soybeans and corn.

When would the use be conducted? Use would be ongoing. The use of glyphosate-tolerant soybeans and corn would be allowed as part of an integrated pest management program used to prepare a seedbed for habitat restoration and management and/or to control noxious and invasive vegetation.

How would the use be conducted? Use would be conducted by cooperative farmers through a cooperative farming agreement or by SUP.

Why is this use being proposed? Refuge managers' experience combined with published literature indicates that use of glyphosate-tolerant soybeans and corn—which allows for the application of an herbicide containing the active ingredient glyphosate during the growing season—is very effective at killing invasive cool season grasses and other noxious and invasive species. This results in a weed-free seedbed used for habitat restoration purposes, which increases the possibility of successful habitat reconstruction efforts on System-managed and -owned lands.

AVAILABILITY OF RESOURCES

Resources involved in the administration and management of the use:

- No additional management or administrative costs will be associated with this activity.
- Special equipment, facilities, or improvements necessary to support the use: none
- Maintenance costs: none
- Monitoring costs: none
- Offsetting revenues: none

ANTICIPATED IMPACTS OF THE USE

Short-Term Impacts. The use of glyphosate-tolerant soybeans and corn will increase the likelihood that conservation tillage can be successfully conducted, reducing soil erosion.

Long-Term Impacts. The effective reconstruction of degraded and weed-infested habitats on System lands to native mixed-grass and tallgrass prairie which can be managed through the historical ecological processes of prescribed fire and prescribed grazing, will cumulatively reduce needed expenditures of labor and funds for weed control efforts on System lands in Region 6 over the long term.

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY

1. Refuge managers will comply with all existing and current policies regarding the use of genetically modified crops (glyphosate-tolerant soybeans and corn).
2. Activity will occur only on currently farmed or previously farmed System-owned or -managed lands.

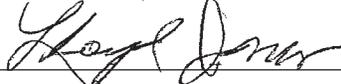
PUBLIC REVIEW AND COMMENT

The period of public review and comment was held from February 2, 2011 through March 4, 2011. A total of eleven written comments were received. Responses to substantive comments can be found in appendix F.

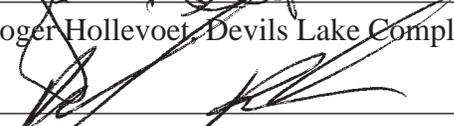
Why was this level of public review and comment selected? It is appropriate to provide opportunity to comment on this compatibility determination at the same time as the draft environmental assessment. The proposed activity has a national as well as local level of interest, and it was felt that a full month with wide distribution should be given to review.

Signature: Refuge Manager

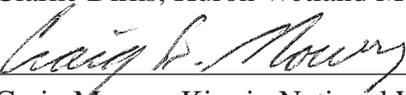
 3/27/11
 Kim Hanson, Arrowwood Complex (Signature) (Date)

 3/28/11
 Lloyd Jones, Audubon Complex (Signature) (Date)

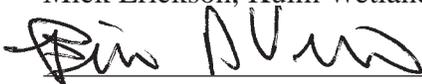
 3/30/11
 Roger Hollevoet, Devils Lake Complex (Signature) (Date)

 3/24/11
 Mike Rich, Flint Hills National Wildlife Refuge (Signature) (Date)

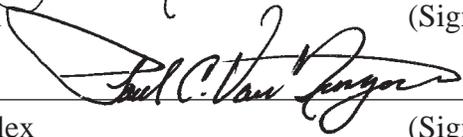
 3/25/2011
 Clarke Dirks, Huron Wetland Management District (Signature) (Date)

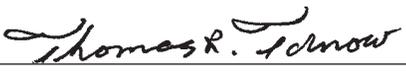
 3-28-11
 Craig Mowry, Kirwin National Wildlife Refuge (Signature) (Date)

 3/29/2011
 Mick Erickson, Kulm Wetland Management District (Signature) (Date)

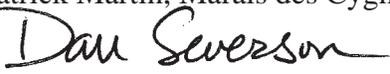
 3-31-11
 Brian DeVries, Lacreek National Wildlife Refuge (Signature) (Date)

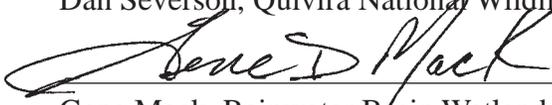
 3/25/2011
 Mike Bryant, Lake Andes Complex (Signature) (Date)

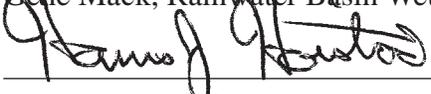
 3/25/2011
 Paul VanNingen, Long Lake Complex (Signature) (Date)

 3-25-11
 Tom Turnow, Madison Wetland Management District (Signature) (Date)

 3/28/2011
 Patrick Martin, Marais des Cygnes National Wildlife Refuge (Signature) (Date)

 4/6/2011
 Dan Severson, Quivira National Wildlife Refuge (Signature) (Date)

 3-29-11
 Gene Mack, Rainwater Basin Wetland Management District (Signature) (Date)

 3-28-11
 Harris Hoistad, Sand Lake Complex (Signature) (Date)

Kelly M. Hogan 3/25/11
Kelly Hogan, Souris River Basin Complex (Signature) (Date)

Rob Bundy 3/25/11
Rob Bundy, Tewaukon Complex (Signature) (Date)

Larry D Martin 29 March 2
Larry Martin, Waubay Complex (Signature) (Date)

Review: Regional Compatibility Coordinator Lloyd Jones 3/22/11
Lloyd Jones (Date)

Review: Zone Supervisor J. Paul Cornes 4-18-11
Paul Cornes (Date)

Review: Zone Supervisor Barbara Boyle 4-18-11

Concurrence: Regional Chief Richard A Coleman 4/18/11
Rick Coleman (Date)

Mandatory 10- or 15-year Re-Evaluation Date: 2021

COMPATIBILITY DETERMINATION

For

Structural Additions on Grassland and FmHA Easements

Use: Construction of buildings, structures, or the planting of shelterbelts on a grassland or FmHA easement. Examples include farmstead buildings, livestock facilities, storage sheds, or the planting of trees (shelterbelt) to serve as a windbreak.

Refuge Name:

South Dakota Wetland Management Districts – Huron, Lake Andes, Madison, Sand Lake & Waubay WMDs; Lacreek NWR.

North Dakota Wetland Management Districts - Arrowwood, Audubon, Chase Lake, Crosby, Devils Lake, J. Clark Salyer, Kulm, Long Lake, Lostwood, Tewaukon, & Valley City.

Montana Wetland Management Districts – Benton Lake, Bowdoin, Charles M. Russell, Northeast Montana, & Northwest Montana.

County: All counties within the Districts listed.

Establishing and Acquisition Authority(ies):

Migratory Bird Conservation Act, as amended (16 U.S.C. 715-715r); Migratory Bird Hunting and Conservation Stamp Act, as amended (16 U.S.C. 718-718j); North American Wetlands Conservation Act (NAWCA), as amended (16 U.S.C. 4401-4414); Fish and Wildlife Act (16 U.S.C. 742f); Land and Water Conservation Fund Act, as amended (916 U.S.C. 4601-9); Consolidated Farm and Rural Development Act (7 U.S.C. 2002).

Refuge Purpose(s):

“...as Waterfowl Production Areas” subject to “...all of the provisions of such Act (Migratory Bird Conservation Act)...except the inviolate sanctuary provisions...” 16 U.S.C. 718(c) (Migratory Bird Hunting and Conservation Stamp Act).

“...for any other management purposes, for migratory birds.” 16 U.S.C. 715d (Migratory Bird Conservation Act).

“...for conservation purposes...” 7 U.S.C. 2002 (Consolidated Farm and Rural Development Act).

“...for conservation...of...wildlife resources...” 16 U.S.C. 742f (Fish and Wildlife Act).

“...for the benefit of wetlands-associated migratory birds...” 16 U.S.C. 4401-4414 (NAWCA).

National Wildlife Refuge System Mission:

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

Description of Use:

What is the use? Is the use a wildlife-dependent public use?

A landowner will occasionally have a need to construct additional structures or facilities, or to plant a shelterbelt to serve as a windbreak, to more efficiently and effectively continue the management of the easement property.

Where would the use be conducted?

Such proposals may be requested on grassland or FmHA easement-protected areas. For most additional structures or facilities, the activity will occur adjacent to existing farmsteads, the base of operations for a farm/ranch, or on a former building site. However, some expansions may occur away from these areas; an example would be the construction of a calving shed in the middle of an easement.

When would the use be conducted?

If secondary or associated impacts exist and can be avoided by restricting the time period for the use, then stipulations restricting the use to avoid these impacts will be used. However, in general, the proposed activities may occur at any time.

Why is this use being proposed?

Most easement landowners live on farms and ranches and their livelihoods are centered on agriculture. More specifically, many grassland easement landowners are ranchers who run livestock operations which result in enhanced species composition and structure of native prairie. In order to better manage or to continue to manage the grasslands protected by easements, these operations will occasionally have a need to expand by constructing additional buildings, facilities or windbreaks on lands protected by easement.

Availability of Resources:

Resources involved in the administration and management of the use:

Financial and staff resources are determined to be sufficient at each field station to administer these requests. Staff time will be needed to evaluate the proposed use, to prepare the site-specific permits, and to ensure compliance with the permit authorization and stipulations necessary to ensure compatibility.

Special equipment, facilities, or improvements necessary to support the use: None

Maintenance costs: None

Monitoring costs: None

Offsetting revenues: None

Anticipated Impacts of the Use:

Short-term impacts:

There may be temporary disturbance to easement-protected grasslands adjacent to the development area from the construction activities. There would be minimal or non-detected disturbance to wildlife as a result of this activity; what would occur would be temporary.

Long-term impacts:

Authorized use of easement-protected grasslands for expanded farmsteads, farm or ranch facilities, or farmstead windbreaks will result in a loss or destruction of the grasslands where the facilities are built. The remainder of the easement tract will not be affected. When conducted on or adjacent to an existing or former building site, which is preferred, the disturbance caused by the expanded farmstead, additional buildings or facilities, or new/ expanded windbreaks is not expected to contribute to habitat fragmentation. When conducted in an area not previously disturbed, these projects will be sited in a manner which limits, to the extent practical, the amount of habitat fragmentation. This can be accomplished by siting additional buildings or facilities along the margins of the easement area.

The impacts associated with these uses will be minimal due to the relatively small size or acreage of the proposed facilities and the infrequency of their authorization. If multiple requests are received from the same landowner or for the same easement by a different or subsequent landowner, these requests will be evaluated independently from one another. Each grassland easement may be authorized up to a threshold level of 8 acres of total impact, whether it occurs at one time or through different approved requests. Therefore, only up to 8 acres of potential grassland impact may be authorized on a grassland easement to accommodate permitted expansion or construction of additional buildings or structures, or shelterbelt for farmstead windbreak purposes. If multiple requests for uses on the same easement are received, each will be evaluated independently of one another. However, total impacted area from all activities may not exceed 8 acres per easement contract, whether it occurs at one time from one request or over time from multiple requests.

There will be no secondary or associated impacts allowed within this Compatibility Determination. Fragmentation of grassland habitats will be minimized to the extent practicable by restricting the permitted activities to areas adjacent to existing infrastructure or at the margins of easement whenever feasible. If the potentially affected grassland provides habitat for a wildlife species of management concern, such as a grouse lek or burrowing owl nesting site, then the use may not be permitted, or permitted only with stipulation that would eliminate the secondary or associated impacts.

Cumulative impacts:

Managers from 18 wetland management districts in Region 6 with grassland were polled in 2011 to get a better understanding of how many requests have been granted for more permanent type of impacts since 2005. There are approximately 1.1 million acres of grassland easements in Region 6. Since 2005, approximately 275 requests have been received to build a permanent structure or a permanent modification of the grassland easement. Of these, 15 requests have been granted for a total impact of 81 acres. The following summarizes these uses:

- 11 Residences/Farm expansions totaling 66 acres

6 of these were honoring verbal agreements made at signing of easements for 41 acres. (note: prior to signing of the programmatic CD in 2005, Service policy allowed up to 8 acres for development at managers' discretion; at that time, the Service would include abandoned farmsteads in easement agreements and landowners were told they would have some flexibility to develop these areas.

3 were farm expansions for a total of 13 acres. These were instances where the son or a family member came back to help on the farm or ranch.

2 were new developments in new locations for a total of 12 acres. These were sons or family members who wanted to assist with the family farm/ranch.

- 2 Storage Buildings (expansions of farmstead) for a total of 6 acres.

In the original 2005 programmatic CD for this activity, it was anticipated that between 40 and 80 acres would be impacted *annually*. However, actual uses approved and acres impacted over the past five years numbered far fewer. A cumulative impact of 0.016% of easement area was originally estimated and deemed insignificant. An actual impact of approximately 0.00007% was realized and is also deemed insignificant.

Therefore, if the rate of grassland easement acquisition remains the same for the next 10 years (approximately 50,000 acres/yr), and assuming the number of requests authorized via this CD remain consistent with past authorizations (0.00007% of the protected area), then the cumulative impacts from activities authorized with this CD will be approximately 112 acres of an estimated 1.6 million acres of grassland.

Public Review and Comment:

The period of public review and comment began on March 10th, 2011 and ended on March 24th, 2011.

The following methods were used to solicit public review and comment:

Public notices were posted at all wetland district offices (see end of this CD).

Why was this level of public review and comment selected?

This method was selected because the proposed activity is considered minor, incidental, infrequent, and has minimal impact.

Summarize comments received and any actions taken or not taken as a result:

No comments were received.

Determination:

The use is compatible with the following stipulations:

Stipulations Necessary to Ensure Compatibility:

1. In order to protect important migratory bird breeding habitat in a working landscape where the human economic environment is centered on farming and ranching, the proposed use must adhere to a spirit of cooperation and coordination with these activities in a manner that supports the continued growth of the Refuge System.
2. The proposed use must relate to the management/operation of the easement interest in a manner which supports the biological integrity, diversity, and environmental health of the easement. Examples include a calving shed or an equipment storage building. Farmstead expansion may be considered if the expansion can be demonstrated to support the continued management of the easement area in a manner beneficial to migratory bird use; e.g., an expansion that facilitates the passing of a ranching operation from one generation to the next.
3. The proposed use must also have no reasonable alternative to be conducted on a non-easement protected area, must not be able to be accommodated by a temporary permit, and must be determined not to materially interfere with or detract from the purpose of the easement or the mission of the System.
4. Issuance of authorization does not preclude the requirements for obtaining necessary permits and/or approvals from other County, State, or Federal agencies and from local landowners, if applicable.
5. Storage of building materials or disposal of fill material from the construction project will not be allowed on easement-protected grassland areas.
6. Additional stipulations may be added or included to address specific concerns with individual projects or requests, or to address any secondary or associated impacts which may occur as a result of the project.

Justification:

The NWRS Administration Act, as amended in 1997, directs the Secretary to “plan and direct the continued growth of the System in a manner that is best designed to...contribute to the conservation of ecosystems...” The Act also calls on the Secretary to “...ensure effective coordination, interaction, and cooperation with owners of land adjoining refuges...” The Service has protected approximately 1.1 million acres of grassland with easements; however, the Service also has a goal of protecting an additional 10 million acres to conserve the grassland ecosystem in the Prairie Pothole Region. Since the Service only purchases easements from willing sellers, the continued growth of the Refuge System in order to achieve the conservation of the grassland ecosystem (as mandated by the Act) requires effective coordination, interaction, and cooperation with owners of land adjoining refuges (on easements, this would be the landowner) and their legitimate needs for development of easement lands related to the on-going management of grassland resources need to be considered.

Before a requested use can be allowed, the refuge manager must determine that the use will not materially interfere with or detract from the purpose for which the easement was acquired or the mission of the NWRS. While several broad “purposes” are listed above for the various authorizations, grassland easements purchased under these authorities are first and foremost a conveyance for “waterfowl habitat protection.” For easements acquired under these acquisition authorities, a “material interference or detraction” is construed as any activity that results in the loss of habitat to support one pair of breeding ducks (this CD is not applicable to Tallgrass Prairie easements in eastern SD and SE ND).

The Compatibility Policy does not require the use of refuge-specific biological impact data, but allows for the use of information derived from other areas or species that are similarly situated. This information should also be readily available to the refuge manager. Over 30 years of waterfowl use data from the PPR allow the Service’s Habitat and Evaluation Population Team (HAPET) in Bismarck, ND to predict waterfowl response to the anticipated impacts described by this compatibility determination. Evaluating the effect of this grassland loss from a waterfowl population perspective is not precise, because it is the loss of productivity of a hen that may or may not nest on a grassland site due to the loss of habitat that is being estimated. In other words, the Service considers the loss of habitat sufficient enough to cause the loss of one pair of ducks to be a “material” interference or detraction from the purpose for which the easement was acquired. The construction of additional buildings, facilities, or windbreaks as described in this CD substantial enough to cause this amount of loss would exceed the threshold of compatibility, as it would result in a “material” interference or detraction. Therefore, the request could not be permitted.

HAPET used the Mallard Model to evaluate the change in the productivity of the affected grassland protected by the easement. The goal was to determine the amount of habitat loss that could be sustained before the loss of one pair of ducks was detected (a material interference or detraction). In the modeling exercise, 160 acres of grassland (representative of a grassland easement) situated among 1,990 acres of cropland within a four-square mile area. This acreage and juxtaposition among cropland was chosen for the grassland area because 160 acres generally represents the smallest individual tract of land considered eligible for the grassland easement program, and the impact of grassland loss will be

detected on isolated, small grassland tracts first. HAPET incrementally removed the amount of grassland in the 160 acre tract until the reduction resulted in the detection of a loss of one pair of ducks. The model suggested that acreage to be 10 acres.

In a second modeling analysis, Breeding Bird Survey data were used to estimate the average breeding bird population on 160 acres of native prairie. A modeled loss of 5% (8 acres) showed no discernable change (positive or negative) in the breeding bird population of the 160 acre tract.

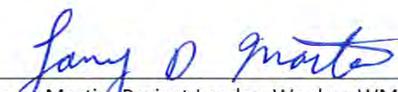
The Service proposes to continue to use the 8 acre (per easement contract) threshold of grassland impact established in the 2005 programmatic CD. The 8 acre figure (80% of the 10 acres modeled by HAPET) corresponds with the 80% value developed for the wetland impact threshold established in a separate programmatic CD (see Exhibit XII-4b in the Region 6 Easement Manual). Prior to permitting any requested use on easements, refuge managers must evaluate the request using the flowchart and accompanying narrative in Chapter XII of the Easement Manual.

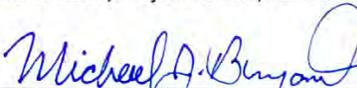
In conclusion, a requested use for additional structures, buildings, or windbreaks that do not exceed the threshold of 8 acres per easement contract are considered to not constitute a “material interference or detraction from” the purpose for which grassland and FmHA easements were established or the mission of the NWRS. They may be allowed as long as there are no reasonable alternatives which would not result in the impact to the easement and the use is one that relates to the management/operation of the easement interest in a manner which supports the biological integrity, diversity, and environmental health of the easement. Chapter XII of the Easement Manual describes the step-by-step evaluation process used by managers when considering any requested use on easement properties.

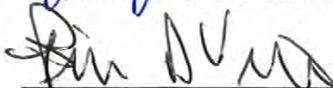
An Appropriate Use Determination and Environmental Assessment on the described use in this CD are being made concurrently with this compatibility determination.

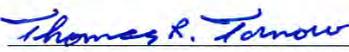
Submitted By:

 3-25-2011
Clarke Dirks, Project Leader, Huron WMD Date

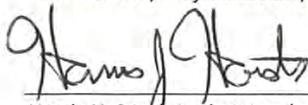
 25 March 2011
Larry Martin, Project Leader, Waubay WMD Date

 3-25-2011
Mike Bryant, Project Leader, Lake Andes WMD Date

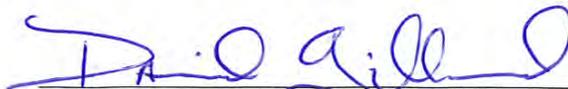
 3-25-11
Brian Devries, Project Leader, LaCreek NWR Date

 3-25-11
Tom Tornow, Project Leader, Madison WMD Date

 3/25/11
Kim Hanson, Project Leader, Arrowwood Complex Date

 3-25-11
Harris Hoistad, Project Leader, Sand Lake WMD Date

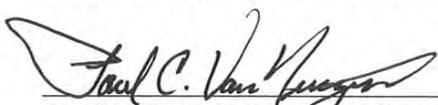
 3/25/11
Lloyd Jones, Project Leader, Audubon WMD Date

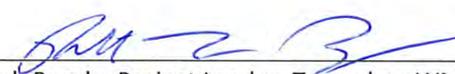

Dave Gillund, Project Leader, Crosby & Lostwood WMDs
Date 3/25/11


Roger Hollevoet, Project Leader, Devils Lake WMD
Date 3/25/11

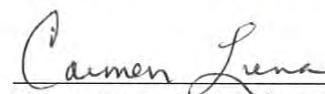

Kelly Hogan, Project Leader, J. Clark Salyer WMD
Date 3/25/11

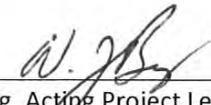

Mick Erickson, Project Leader, Kulm WMD
Date 3-25-2011


Paul Van Ningen, Project Leader, Long Lake WMD
Date 3-25-2011


Rob Bundy, Project Leader, Tewaukon WMD
Date 3/25/11

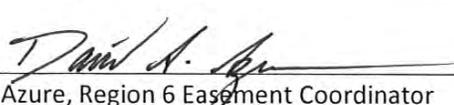

Kathy Burchett, Project Leader, Benton Lake WMD, NW Montana WMD
Date 3/25/2011


Carmen Luna, Project Leader, Bowdoin WMD
Date 3/25/2011


Bill Berg, Acting Project Leader, Charles M. Russell WMD
Date 3/25/2011


Jerry Rodriguez, Project Leader, NE Montana WMD
Date 03/25/11

Prepared By:


Dave Azure, Region 6 Easement Coordinator
Date 3/25/11

Reviewed By:

 Paul Cornes, Refuge Supervisor, Region 6

Date

 Dean Rundle, Refuge Supervisor, Region 6

Date

Approved:

 Rick Coleman, ARD – Refuges/Partners for Fish & Wildlife, Region 6

Date

Mandatory 10-year Reevaluation Date:

10 years from the date of the APPROVAL signature

Enter here: _____

Text of Public Notice:

The U.S. Fish and Wildlife Service (Service) is soliciting public comments on whether to allow limited construction of buildings or structures on grassland or FmHA easements in North Dakota, South Dakota and Montana. Examples include farmstead buildings, livestock facilities, storage sheds, or the planting of trees to serve as a windbreak. These activities will cause minor temporary disturbance and insignificant permanent impact to grassland areas. Impacts to protected grasslands and habitat fragmentation will be minimized to the extent practicable through stipulations agreed to by the landowner and defined in the authorizing document. Accommodation of essential facility expansions and additions to facilitate grassland management will contribute to the biological integrity, diversity, and overall environmental health of the lands and landscapes protected by easements. People wishing to provide comments can do so by March 24th, 2011 by submitting them to the U.S. Fish & Wildlife Service, Chase Lake Prairie Project, 5924 19th St. SE, Woodworth, ND 58496. For more information, contact Dave Azure at (701) 752-4218, ext. 2.

**Compatibility Determination
for
Allowing Dogs on Fish & Wildlife Service Fee-Owned WPA's**

Use: We encourage the use of dogs for hunting. We allow dogs for other recreational activities only if the dog is confined to a vehicle, boat, ice house, or is on a leash controlled by the handler. We prohibit dog training and dogs roaming freely.

Refuge Name:

North Dakota Wetland Management Districts:

Arrowwood Wetland Management District
Audubon Wetland Management District
Chase Lake Wetland Management District
Crosby Wetland Management District
Devils Lake Wetland Management District
J. Clark Salyer Wetland Management District
Kulm Wetland Management District
Long Lake Wetland Management District
Lostwood Wetland Management District
Tewaukon Wetland Management District
Valley City Wetland Management District

South Dakota Wetland Management Districts:

Huron Wetland Management District
Lake Andes Wetland Management District
Madison Wetland Management District
Sand Lake Wetland Management District
Waubay Wetland Management District

County: All counties within the Districts listed above

Establishing and Acquisition Authority(ies):

Consolidated Farm and Rural Development Act, Migratory Bird Conservation Act, Migratory Bird Hunting and Conservation Stamp Tax, North American Wetlands Conservation Act, Emergency Wetlands Resources Act

Refuge Purpose(s):

"...as Waterfowl Production Areas" subject to "...all of the provisions of such Act [Migratory Bird Conservation Act] ...except the inviolate sanctuary provisions..." 16 U.S.C. 718(c) (Migratory Bird Hunting and Conservation Stamp)

“...for any other management purpose, for migratory birds.” 16 U.S.C § 715d (Migratory Bird Conservation Act)

“...for conservation purposes...” 7 U.S.C. § 2002 (Consolidated Farm and Rural Development Act)

National Wildlife Refuge Mission:

“The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Description of Use:

What is the use? Is the use a wildlife-dependent public use?

Dogs are allowed for hunting. With the increase in urban encroachment, more people are recreating on WPAs, and bringing their dogs with them while hunting, ice fishing, boating, fishing, running, walking trails, etc. Controlled use of dogs on WPAs will not threaten wildlife. This is a wildlife dependent use.

Where would the use be conducted?

The use would be conducted on WPAs in all the Wetland Management Districts listed.

When would the use be conducted?

The use could be conducted at any time of the year.

How would the use be conducted?

The use would be conducted as long as the owner maintains control of the dog. Confined and controlled dogs are expected to have little to no effect on our wildlife resources.

Why is this use being proposed?

Recreational users are requesting this use to allow the companionship of their dogs while they are visiting WPAs for consumptive and non consumptive uses.

Availability of Resources:

Resources involved in the administration and management of the use:

No additional management of administrative costs will be associated with this activity.

Special equipment, facilities, or improvements necessary to support the use:

None

Maintenance Costs: None

Monitoring Costs: None

Offsetting revenues: None

Anticipated Impacts of the Use:

Short-term impacts:

There would be minimal or non-detected disturbance to wildlife as a result of the activity, and what would occur would be very temporary.

Long-term impacts:

Confined and controlled dogs are expected to have little to no effect on the wildlife resources. There would be no long-term impacts.

Cumulative impacts:

There would be no negative cumulative impacts to WPAs. The use may provide an increase in visitor use as the users can now bring along their family pet dog.

Public Review and Comment:

The period of public review and comment began 06/18/2010 and ended 07/02/2010.

The following methods were used to solicit public review and comment:

Posted notices in public places.

Why was this level of public review and comment selected?

The proposed activity is considered minor, with minimal temporary disturbance and no negative permanent and cumulative impacts.

Summarize comments received and any actions taken or not taken because of comments received:

Received: No Comments were received during period of public review. Attached are comments received prior to the public review that resulted in the proposed change in wording on dog uses.

Determination:

Use is compatible with the following stipulations:

Stipulations Necessary to Ensure Compatibility:

Dogs are allowed for hunting. Dogs used for other activities must be confined to a vehicle, boat, or ice house, or is on a leash controlled by the handler. We prohibit dog training and dogs allowed to roam freely.

Justification:

There will be minimal temporary disturbance and/or permanent impact to WPAs by this activity. The use will not materially interfere with or detract from the mission or purpose of the NWRS.

If the proposed use is an economic use of refuge natural resources, how would it contribute to the purposes of the refuge or the mission of the National Wildlife Refuge System?

It is not an economic use.

Text of Public Notice:

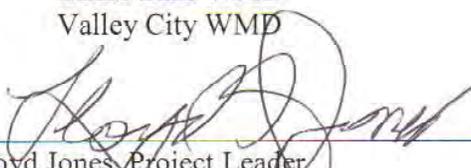
The U.S. Fish and Wildlife Service (Service) is soliciting public comments on General Regulations on the uses of dogs in addition to hunting on Waterfowl Production Areas in North Dakota and South Dakota. The regulation on the use of dogs will state: “We encourage the use of dogs for hunting. We allow dogs for other activities, only if the dog is confined to a vehicle, boat, or ice house, or is on a leash controlled by the handler. We prohibit dog training and dogs roaming freely.”

People wishing to provide comments can do so by July 2 by submitting them to the Zone Law Enforcement Office, P.O. Box 48 Madison SD or Zone Law Enforcement, 3425 Miriam Avenue, Bismarck, ND 58501. For more information, contact Ray Portwood at 605 256-2974 or David Bonham at (701) 355-8572.

Submitted:



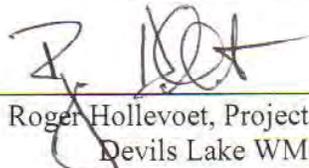
Kim Hanson, Project Leader
Arrowwood WMD
Chase Lake WMD
Valley City WMD
7/15/2010
Date



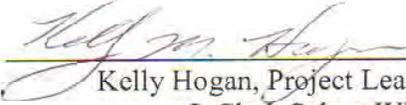
Lloyd Jones, Project Leader
Audubon WMD
7/15/10
Date



Dave Giffund, Project Leader
Crosby WMD
Lostwood WMD
7/15/10
Date



Roger Hollevoet, Project Leader
Devils Lake WMD
7/16/2010
Date



Kelly Hogan, Project Leader
J. Clark Salyer WMD
7/15/2010
Date



Mick Erickson, Project Leader
Kulm WMD
7/15/2010
Date



Paul Van Ningen, Project Leader
Long Lake WMD
7/15/2010
Date

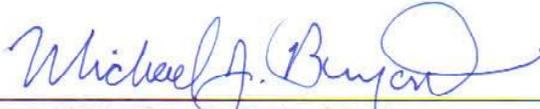


Rob Bundy, Project Leader
Tewaukon WMD
7/15/2010
Date

Clark Dirks, Project Leader
Huron WMD

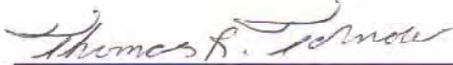
7/15/2010

Date

Mike Bryant, Project Leader
Lake Andes WMD

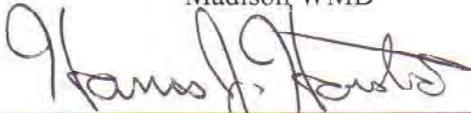
7-15-2010

Date

Tom Tornow, Project Leader
Madison WMD

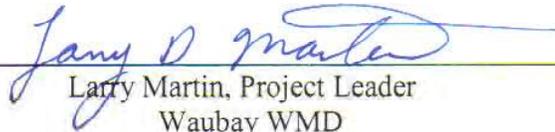
7-15-2010

Date

Harris Hoistad, Project Leader
Sand Lake WMD

7-15-10

Date

Larry Martin, Project Leader
Waubay WMD

7-15-10

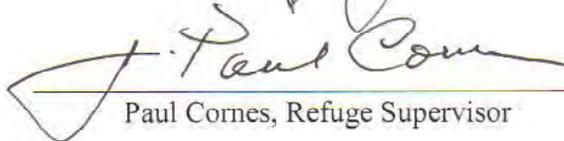
Date

Reviewed:

Lloyd Jones, Regional Compatibility Coordinator



Date



Paul Cornes, Refuge Supervisor

9-27-10

Date

Approved:Rick Coleman, ARD – Refuges/Partners for Fish & Wildlife
Region 6

9/28/10

Date

Mandatory 10-year Re-Evaluation Date:

10 years from the date of the “Approved” signature

COMPATIBILITY DETERMINATION
for
PUBLIC AND PRIVATE
BURIED UTILITY LINES
OCCURRING ON
FWS
EASEMENT PROPERTIES
or Fee-Owned WPA's

Use: Projects associated with buried utility lines and/or cables where impacts to Service lands and interests are only temporary and minor. Requests from utility companies, rural water systems, and minor impacts associated with some highway improvement projects, and certain requests from private landowners. The use covered by this compatibility determination is in conjunction with the Region 6 Policy Memorandum of April 5, 2002, entitled "Rights-of Way and Permits for Minor Disturbance Projects". See Exhibit XII-7 for a copy of the Policy Memorandum.

Station Names:

South Dakota Wetland Management Districts:

Lake Andes WMD, SD
Madison WMD, SD
Huron WMD, SD
Waubay WMD, SD
Sand Lake WMD, SD
Lacreek NWR, SD

North Dakota Wetland Management Districts:

Tewaukon WMD, ND
Kulm WMD, ND
Arrowwood WMD, ND
Valley City WMD, ND
Chase Lake WMD, ND
Audubon WMD, ND
Long Lake WMD, ND
J Clark Salyer WMD, ND
Devils Lake WMD, ND
Lostwood WMD, ND
Crosby WMD, ND

Montana Wetland Management Districts:

Medicine Lake WMD, MT
 Bowdoin WMD, MT
 Benton Lake WMD, MT
 Northwest Montana WMD, MT

Establishing and Acquisition Authorities:

Waterfowl Production Areas Wetland Easements, Grassland Easements - The Migratory Bird Hunting and Conservation Stamp Act, March 16, 1934, (16 USC Sec. 718-718h, 48 Stat. 452) as amended August 1, 1958, (PL 85-585; 72 Stat. 486) for acquisition of “Waterfowl Production Areas”; the Wetlands Loan Act, October 4, 1961, as amended (16 USC 715k-3 - 715k-5, Stat. 813), funds appropriated under the Wetlands Loan Act are merged with duck stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under the provisions of the Migratory Bird Conservation Act, February 18, 1929, (16 USC Sec. 715, 715d - 715r, as amended.

FmHA deed restricted properties - Consolidated Farm and Rural Development Act - (7 USC Para. 2002).

Tall Grass Prairie Tracts - Land and Water Conservation Fund Act of 1965, as amended (16 U.S.C. 460l-4 through 460l-11)

Refuge Purpose(s):

“...as Waterfowl Production Areas” subject to “...all of the provisions of such Act [Migratory Bird Conservation Act] ...except the inviolate sanctuary provisions...” 16 USC 718(c) (Migratory Bird Hunting and Conservation Stamp)

“...for any other management purpose, for migratory birds.” 16 USC 715d (Migratory Bird Conservation Act)

“...for conservation purposes...” 7 USC 2002 (Consolidated Farm and Rural Development Act)

National Wildlife Refuge System Mission:

“The Mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966, as amended) [16 USC 668(dd)-668(ee)].

Description of Use:

Wetland Management Districts receive frequent requests from utility companies to cross fee and easement properties with buried pipelines, electric cables, communications lines, natural gas lines, and/or rural or potable water lines or systems. These requests are generally part of an overall area-wide project to provide better services to the people residing in the area. When these types of projects are proposed in the Prairie Pothole Region, it may not be possible to avoid all Service land interests (fee and easement), and therefore, some Service property interests may be temporarily impacted during the construction period. This use includes requests for projects on wetland, grassland, FmHA, or conservation easements or fee-owned Waterfowl Production Areas. Construction methods may include cable-plowing, utilizing a vibrating cable-plow, or narrow trenching equipment. In each case, the surface disturbance is minimal, and the temporary cable or trenching scar will grow over with grass or marsh vegetation within a year or two.

A second area covered by this Compatibility Determination is requests received to temporarily alter upland sites in conjunction with highway maintenance projects to improve highway safety. These activities may be outside the existing highway right-of-way, but a formal ROW expansion is not needed because of the only temporary impacts to Service interests. An example of this type of request is for back-sloping a hill adjacent to the ROW to remove a snow catch area. Construction methods here include stripping away the vegetation and topsoil, removing enough of the hill to satisfy the sloping requirements, re-spreading the topsoil, and reseeding the vegetation to the manager's specifications.

It is expected that the use will be conducted as a one time event in the summer season when frost no longer exists and conditions have dried sufficiently to minimize grass disturbance. There is little to no future maintenance.

Availability of Resources:

Financial and staff resources are determined to be sufficient at each field station to administer these requests. Staff time will be needed to evaluate the proposed use, to prepare the site-specific permits, and to insure compliance with the permit authorization and stipulations, as well as checking for satisfactory restoration of any disturbed sites after the reseeded areas have had a chance to grow in.

No specialized equipment will be necessary, as the work requirement associated with these projects is monitoring and compliance checking only. Actual work, including restoration needs, will be completed by the applicant as specified by the wetlands manager.

Anticipated Impacts of the Use:

The uses authorized under this compatibility determination must result in impacts that are only very minor and temporary in nature. In other words, there will be NO long term negative impacts to Service land or water interests.

Examples of work authorized under this Compatibility Determination include:

- trenched and backfilled areas to accommodate buried pipelines and cables
- buried utility lines or PVC water lines using a cable plow
- excavated trenches using a backhoe equipped with a “trenching” bucket (approximately 8 inches wide).
- use of crawler-type equipment to shave hills and back-sloping associated with highway safety projects which may extend beyond the existing ROW.

Anticipated impacts are as follows:

- temporary disturbance to the grassland area during and for a period of time following the backfilled trench
- some wildlife may be temporarily displaced during the actual construction
- water quality may be temporarily and slightly reduced due to possible silt deposition if a rainstorm washes the exposed areas for a short period of time after backfilling the trenches or washing of the exposed back-sloped areas.

There will be no long-term impacts nor will there be any cumulative impacts to Service lands or interests.

Public Review and Comment:

The period of public review and comment began April 10, 2005 and ended April 17, 2005.

Posted notices were made in public places for each of the field stations listed on this Compatibility Determination. This method was selected because the proposed activity is considered minor, incidental, infrequent, with only short-term disturbance, and/or displacement of wildlife. No comments were received as a result of the posted notices.

Determination:

Compatibility Threshold: Material Interference of Detraction from the Purposes and/or Mission of the NWRS.

_____ Use is Not Compatible

XXX Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Issuance of a permit does not preclude the requirements for obtaining necessary permits and/or approvals from other County, State, or Federal Agencies and from local landowners.
2. The permit is issued subject to the revocation and appeals procedure contained in Title 50, Part 25 of the Code of Federal Regulations.
3. The proposed activity will result in no impacts to wetlands protected by FWS easements. No wetlands or any part thereof will be filled with any material, leveled by any equipment, drained by any means including pumping or by diverting water, or burned.
4. Any work within protected wetland basins will be backfilled and compacted to the normal contour of the wetland bottom. No excess, non-compacted fill will be permitted.
5. Upland impacts to areas protected by FWS grassland easements will be only temporary. Any disturbed areas will be leveled, seeded, and restored to pre-work condition as specified by the Refuge Manager.
6. Additional stipulations may be added to address specific concerns with individual projects.
7. The authorization under the permit issued in accordance with this determination is for the initial construction only; any future maintenance or repairs will require additional consultation with the Wetland Management District office, and will require a supplemental permit issued prior to the initiation of any remedial work.

Justification:

There will be minimal and temporary disturbance to the wetland and grassland resources protected by the Service's fee or easement by this activity. The use will not detract from or materially interfere with the mission or purpose of the NWRS. The uses covered by this CD are considered NOT to be an economic use under the guidelines found in 50CFR29.1.

Prior to issuing any permit, the manager will have worked with the applicant to avoid as many impacts as possible, and then to minimize any impacts to Service interests. The impacts are deemed to be minor and only temporary, and complete site restoration will occur, usually with the next growing season.

Where possible, and without compromising any preservation program goal or objective, and without affecting (in the long term) any land interest held by the Service, it is critically important that field stations be able to accommodate these requested uses which are designed to improve highway safety or the quality of life in rural America.

Mandatory 10-Year Reevaluation Date:

10 years from the date of APPROVAL signature.

Enter Reevaluation Date: _____

Signatures:

Submitted: Michael J. Bryant 3/10/2005
Michael Bryant, Project Leader Date
Lake Andes WMD

Thomas S. Tomnow 3-10-05
Tom Tomnow, Project Leader Date
Madison WMD

Harris J. Hoistad 3-10-05
Harris Hoistad, Project Leader Date
Huron WMD

Larry D. Martin 3-10-05
Larry Martin, Project Leader Date
Waubay WMD

Gene Williams 3-10-05
Gene Williams, Project Leader Date
Sand Lake WMD

Tom Koerner 3-10-05
Tom Koerner, Project Leader Date
Lacreek NWR

Jack Lalor 4/26/05
Jack Lalor, Acting Project Leader Date
Tewaukon WMD

Dave Azure 3-10-05
Dave Azure, Acting Project Leader Date
Kulm WMD

Kim D. Hanson 3/10/05
Kim D. Hanson, Project Leader Date
Arrowwood WMD
Chase Lake WMD
Valley City WMD

Gary Williams 3/10/05
Gary Williams, Acting Project Leader Date
Audubon WMD

Paul Van Ningen
 Paul Van Ningen, Project Leader
 Long Lake WMD
 Date 3/10/2005

Theodore W. Gutzke
 Tedd Gutzke, Project Leader
 J Clark Salyer WMD
 Date 3/10/2005

R. Hollevoet
 Roger Hollevoet, Project Leader
 Devils Lake WMD
 Date 3/10/05

Fred G. Giese
 Fred G. Giese, Project Leader
 Lostwood WMD
 Crosby WMD
 Date 04/26/05

Michael D. Rabenberg
 Michael Rabenberg, Acting Project Leader
 Medicine Lake WMD
 Date 04/26/05

Carmen R. Luna
 Carmen Luna, Project Leader
 Bowdoin WMD
 Date 4/26/05

David Gilland
 David Gilland, Project Leader
 Benton Lake WMD
 Date 4/26/05

Steven W. Kallan
 Steve Kallan, Project Leader
 NW Montana WMD
 Date 4/26/05

Review: Lloyd Jones
 Lloyd Jones
 Regional Compatibility Coordinator
 Date 4/27/05

Steve Bunch
4/28/05
Refuge Supervisor
 Date 4/28/05

Approval: Ronald D. Shupe
 Ronald D. Shupe, Region 6
 Acting Chief of Refuges
 Date 2/10/15, 2005

COMPATIBILITY DETERMINATION
for
Authorized Health and Safety Needs
Associated with FWS Wetland Easements
resulting in NO Permanent Impacts

Use: Approved requests to temporarily pump or drain an easement protected wetland which is causing a Health and Safety problem or a major threat to personal or public property, such as flooding a road, driveway, resulting in seepage in a basement, surface waters affecting a domestic well or a sanitation system, or surface waters affecting a feed storage area or feedlot. The landowner's right to drain or otherwise alter the natural characteristics of the wetland is one of the rights the Service acquired with the easement. The use authorized under this CD is to permit temporary dewatering of protected wetlands which are posing a health and/or safety threat.

Station Names:

South Dakota Wetland Management Districts:

Lake Andes WMD, SD
Madison WMD, SD
Huron WMD, SD
Waubay WMD, SD
Sand Lake WMD, SD
Lacreek NWR, SD

North Dakota Wetland Management Districts:

Tewaukon WMD, ND
Kulm WMD, ND
Arrowwood WMD, ND
Valley City WMD, ND
Chase Lake WMD, ND
Audubon WMD, ND
Long Lake WMD, ND
J Clark Salyer WMD, ND
Devils Lake WMD, ND
Lostwood WMD, ND
Crosby WMD, ND

Montana Wetland Management Districts:

Medicine Lake WMD, MT
 Bowdoin WMD, MT
 Benton Lake WMD, MT
 Northwest Montana WMD, MT

Establishing and Acquisition Authorities:

Waterfowl Production Areas Wetland Easements, Grassland Easements - The Migratory Bird Hunting and Conservation Stamp Act, March 16, 1934, (16 USC Sec. 718-718h, 48 Stat. 452) as amended August 1, 1958, (PL 85-585; 72 Stat. 486) for acquisition of “Waterfowl Production Areas”; the Wetlands Loan Act, October 4, 1961, as amended (16 USC 715k-3 - 715k-5, Stat. 813), funds appropriated under the Wetlands Loan Act are merged with duck stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under the provisions of the Migratory Bird Conservation Act, February 18, 1929, (16 USC Sec. 715, 715d - 715r, as amended.

FmHA deed restricted properties - Consolidated Farm and Rural Development Act - (7 USC Para. 2002).

Tall Grass Prairie Tracts - Land and Water Conservation Fund Act of 1965, as amended (16 U.S.C. 460l-4 through 460l-11)

Refuge Purpose(s):

“...as Waterfowl Production Areas” subject to “...all of the provisions of such Act [Migratory Bird Conservation Act] ...except the inviolate sanctuary provisions...” 16 USC 718(c) (Migratory Bird Hunting and Conservation Stamp)

“...for any other management purpose, for migratory birds.” 16 USC 715d (Migratory Bird Conservation Act)

“...for conservation purposes...” 7 USC 2002 (Consolidated Farm and Rural Development Act)

National Wildlife Refuge System Mission:

“The Mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966, as amended) [16 USC 668(dd)-668(ee)].

Description of Use:

During times of high water cycles or excessive runoff, prairie wetlands can temporarily swell to an oversized condition. The easement agreements provide for this natural fluctuation in wetland hydrology and relief is generally not authorized. However, when the over-full wetland basins result in situations which involve health, safety, or major threats to public or landowner appurtenances which cannot be resolved without violating the easement and for which no reasonable alternative exists, then the Service is authorized to provide relief to nullify the Health and Safety threat. The use associated with this category of request results in either pumping or draining the problem-causing wetland, lowering its elevation to a point that the problem is resolved. Situations involving Health and Safety include: major threats to buildings, roads, and infrastructure; basement flooding caused by high water in a nearby wetland, barnyard or feedlot flooding, driveway or other road flooding, or threat to domestic water supply or sewer system

The use results in ONLY a temporary lowering of the wetland. If a drainage ditch was used to lower the wetland, it must be filled to the original contour of the land after the wetland has been lowered, and the threat has subsided.

The use could occur in any of the Wetland Management Districts listed within the CD, and would likely occur during or shortly after the spring runoff or after a large rainstorm event. These are the conditions which sometimes result in the protected wetland basins becoming larger than the historic photo record would indicate.

Any requested use to lower the water levels of protected wetlands will result in ONLY temporary impacts, lasting a year or two.

Availability of Resources:

Financial and staff resources are determined to be sufficient at each field station to administer these requests. Staff time will be needed to evaluate the proposed use, to prepare the site-specific permits, and to insure compliance with the permit authorization and stipulations, as well as checking for satisfactory restoration of any disturbed sites after the wetland areas have returned to more historical elevations.

No specialized equipment will be necessary, as any work associated with these projects involves monitoring and compliance checking only. Actual work, including restoration needs, will be completed by the applicant as specified by the wetlands manager.

Anticipated Impacts of the Use:**Short-term Impacts:**

Short-term impacts include the temporary loss of some wetlands habitat because of the authorized lowering of the wetland causing the Health and Safety problem. Since this is only a temporary authorization, limitations of the amount of lowering needed will not be imposed except to require the least amount necessary to resolve the issue. The length of time will be “until the situation is resolved” NTE one year. Permits can be extended if necessary.

After the situation has been resolved, the wetland’s hydrology will be restored, and if drainage was used to reduce the wetlands’s volume, then the drainage facilities will be restored to a “pre-work” condition.

Long-term Impacts:

There will be no long-term impacts associated with this authorization to resolve a Health and Safety issue.

Cumulative Impacts:

There will be no cumulative impacts as a result of possible numerous authorizations because there are no permanent impacts. The authorization will be granted only to resolve the issue at hand.

Public Review and Comment:

The period of public review and comment began April 10, 2005 and ended April 17, 2005.

Posted notices were made in public places for each of the field stations listed on this Compatibility Determination. This method was selected because the proposed activity is considered minor, incidental, infrequent, with only short-term disturbance, and/or displacement of wildlife. No comments were received as a result of the posted notices.

Determination:

Compatibility Threshold: Material Interference of Detraction from the Purposes and/or Mission of the NWRS.

_____ Use is Not Compatible

XXX Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Issuance of a permit does not preclude the requirements for obtaining necessary permits and/or approvals from other County, State, or Federal Agencies and from local landowners.
2. The permit is issued subject to the revocation and appeals procedure contained in Title 50, Part 25 of the Code of Federal Regulations.
3. When the Health and Safety threat has subsided, the wetland will be allowed to function under natural hydrological cycles. Any drainage facilities which were installed to lower the wetland will be restored, compacted, and rendered non-functional.
4. If the area is also protected with a Service grassland easement, then the backfilled ditch will also be reseeded to the specifications of the wetland manager.

Justification:

There will be only temporary disturbance to the wetland and possible grassland resources protected by the Service's easement by this activity. The use will not detract from or materially interfere with the mission or purpose of the NWRS. The uses covered by this CD are considered NOT to be an economic use under the guidelines found in 50CFR29.1.

Where possible, and without compromising any preservation program goal or objective, and without affecting (in the long term) any land interest held by the Service, it is critically important that field stations be able to accommodate these requested uses which are designed to avert a human health and/or safety issue or a major threat to personal or public property.

Mandatory 10-Year Reevaluation Date:

10 years from the date of APPROVAL signature. Enter Reevaluation Date: _____

Signatures:

<u>Submitted:</u> <u>Michael J. Bryant</u> Michael Bryant, Project Leader Lake Andes WMD	<u>3/10/2005</u> Date
<u>Thomas R. Tornow</u> Tom Tornow, Project Leader Madison WMD	<u>3-10-05</u> Date
<u>Harris J. Hoistad</u> Harris Hoistad, Project Leader Huron WMD	<u>3-10-05</u> Date
<u>Larry D. Martin</u> Larry Martin, Project Leader Waubay WMD	<u>3-10-05</u> Date
<u>Gene Williams</u> Gene Williams, Project Leader Sand Lake WMD	<u>3-10-05</u> Date
<u>Tom Koerner</u> Tom Koerner, Project Leader Lacreek NWR	<u>3-10-05</u> Date
<u>Jack Lalor</u> Jack Lalor, Acting Project Leader Tewaukon WMD	<u>4/26/05</u> Date
<u>Dave Azure</u> Dave Azure, Acting Project Leader Kulm WMD	<u>3-10-05</u> Date
<u>Kim D. Hanson</u> Kim D. Hanson, Project Leader Arrowwood WMD Chase Lake WMD Valley City WMD	<u>3/10/05</u> Date
<u>Gary Williams</u> Gary Williams, Acting Project Leader Audubon WMD	<u>3/10/05</u> Date

Paul Van Ningen
Paul Van Ningen, Project Leader
Long Lake WMD

3/10/2005
Date

Theodore W. Gutzke
Tedd Gutzke, Project Leader
I Clark Salyer WMD

3/10/2005
Date

Roger Hollevoet
Roger Hollevoet, Project Leader
Devils Lake WMD

3/10/05
Date

Fred G. Giese
Fred G. Giese, Project Leader
Lostwood WMD
Crosby WMD

04/26/05
Date

Michael D. Rabenberg
Michael Rabenberg, Acting Project Leader
Medicine Lake WMD

04/26/05
Date

Carmen R. Luna
Carmen Luna, Project Leader
Bowdoin WMD

4/26/05
Date

David Gilland
David Gilland, Project Leader
Benton Lake WMD

4/26/05
Date

Steve W. Kallan
Steve Kallan, Project Leader
NW Montana WMD

4/26/05
Date

Review:

Lloyd Jones
Lloyd Jones
Regional Compatibility Coordinator

4.27.05
Date

Steve Bent
4/28/05

Approval:

Rodney F. Krey
Rodney Krey / Refuge Supervisor
Ron Shupe
Ronald D. Shupe, Region 6
Acting Chief of Refuges

4/28/05
5/10/15, 2005
Date

COMPATIBILITY DETERMINATION
for
Authorized Early Haying
of Grassland Easements
for
Management Purposes

Use: Authorized Early Haying of Grassland Easements and FmHA Conservation Easements.

Station Names:

South Dakota Wetland Management Districts:

Lake Andes WMD, SD
Madison WMD, SD
Huron WMD, SD
Waubay WMD, SD
Sand Lake WMD, SD
Lacreek NWR, SD

North Dakota Wetland Management Districts:

Tewaukon WMD, ND
Kulm WMD, ND
Arrowwood WMD, ND
Valley City WMD, ND
Chase Lake WMD, ND
Audubon WMD, ND
Long Lake WMD, ND
J Clark Salyer WMD, ND
Devils Lake WMD, ND
Lostwood WMD, ND
Crosby WMD, ND

Montana Wetland Management Districts:

Medicine Lake WMD, MT
Bowdoin WMD, MT
Benton Lake WMD, MT
Northwest Montana WMD, MT

Establishing and Acquisition Authorities:

Waterfowl Production Areas, Wetland Easements, Grassland Easements - The Migratory Bird Hunting and Conservation Stamp Act, March 16, 1934, (16 USC Sec. 718-718h, 48 Stat. 452) as amended August 1, 1958, (PL 85-585; 72 Stat. 486) for acquisition of “Waterfowl Production Areas”; the Wetlands Loan Act, October 4, 1961, as amended (16 USC 715k-3 - 715k-5, Stat. 813), funds appropriated under the Wetlands Loan Act are merged with duck stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under the provisions of the Migratory Bird Conservation Act, February 18, 1929, (16 USC Sec. 715, 715d - 715r, as amended).

FmHA deed restricted properties - Consolidated Farm and Rural Development Act - (7 USC Para. 2002).

Tall Grass Prairie Tracts - Land and Water Conservation Fund Act of 1965, as amended (16 U.S.C. 460l-4 through 460l-11)

Refuge Purpose(s):

“...as Waterfowl Production Areas” subject to “...all of the provisions of such Act [Migratory Bird Conservation Act] ...except the inviolate sanctuary provisions...” 16 USC 718(c) (Migratory Bird Hunting and Conservation Stamp)

“...for any other management purpose, for migratory birds.” 16 USC 715d (Migratory Bird Conservation Act)

“...for conservation purposes...” 7 USC 2002 (Consolidated Farm and Rural Development Act)

National Wildlife Refuge System Mission:

“The Mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966, as amended) [16 USC 668(dd)-668(ee)].

Description of Use:

Haying is the cutting and removal, by baling or stacking, and transport to an off-site location, of grass and/or forb species. Haying of grassland easement-protected properties is not restricted after July 15 each year. Landowners may hay their lands every year after

this date without compromising the terms of the easement. However, the use described in this compatibility determination is to permit early haying (prior to July 15) of the uplands to accomplish some management purpose on the land. The control of noxious weeds is primarily the target of early haying agreements. Canada thistle, a perennial, primary noxious weed, is required by state law to be controlled by each landowner. Haying can be an effective tool in controlling the seed dispersal of Canada thistle, but it must be done before the thistle flowers mature and develop wind-dispersed seeds. In many years, the thistle plants have matured and dispersed their seeds prior to July 15, and haying after seed dispersal would not be effective as a management tool.

Periodic early haying may also be authorized to help improve the vigor and health of the grass stand. It is expected that the authorized use of early haying for this purpose will be used very infrequently.

Haying prior to July 15th to increase plant density is also a management tool occasionally used. This is primarily done the first few years after a new seeding to encourage tillering and to accelerate establishment. Haying, rather than just mowing, the plants helps to prevent shading caused by the mowed vegetation left in the field. Haying done just prior to seed head development will stimulate most grass plants to propagate vegetatively by rhizomes rather than by seed production. This generally encourages grass plants to fill in bare soil areas between plants, compete more favorably with invasive species, and shorten the overall establishment period on new grass seedings.

Availability of Resources:

Financial and staff resources are determined to be sufficient at each field station to administer these requests. Staff time will be needed to evaluate the proposed use, to prepare the site-specific permits, and to insure compliance with the permit authorization and stipulations necessary to insure compatibility.

Anticipated Impacts of the Use:

Authorized early haying of grassland easements may displace some wildlife species during the time period the haying operation is being performed. It is possible, also, that some nesting migratory birds may be disturbed, and abandon their nests as a result of the haying operation. The decision to authorize early haying must weigh the potential benefits of legally required weed control, plant density management, and other management gains, against these short-term losses associated with the early haying.

Cutting and removal of standing grasses prior to July 15 will also result in short-term loss of habitat for those species requiring tall grasses for feeding and perching.

The impacts associated with this authorized use will be minimal since the area will likely be hayed after July 15 anyway, which is not prohibited by the easement agreement. Therefore, the impacts of the use are only between the time of authorized early haying, and July 16 in any given year.

Public Review and Comment:

The period of public review and comment began April 10, 2005 and ended April 17, 2005.

Posted notices were made in public places for each of the field stations listed on this Compatibility Determination. This method was selected because the proposed activity is considered minor, incidental, infrequent, with only short-term disturbance, and/or displacement of wildlife. No comments were received as a result of the posted notices.

Determination:

Compatibility Threshold: As this activity is an economic use, it must meet the compatibility threshold of “contributing to the Mission and Purposes” of the Refuge System and the Refuge Area.

_____ Use is Not Compatible

XXX Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Issuance of a permit does not preclude the requirements for obtaining necessary permits and/or approvals from other County, State, or Federal Agencies and from local landowners.
2. The permit is issued subject to the revocation and appeals procedure contained in Title 50, Part 25 of the Code of Federal Regulations.
3. Permits for early haying will not be issued in consecutive years for the same land.
4. If a permit is issued for weed control on tame grassland, a condition of the permit must include a required fall herbicide treatment of the regrown noxious weeds at the permittee’s expense.
5. Bales or stacks must be removed from the area within two weeks after baling.

6. Early haying to encourage tillering on new grass seedings should leave at least 5" of stubble to ensure sufficient leaf area needed for the responding growth.

Justification:

The control of noxious weeds is required of every landowner by state law, even on grassland easement-encumbered property. If infestations are severe, then a measure of weed control can be achieved by haying the lands with the infestation to limit the seed dispersal. Seed dispersal in Canada thistle often happens prior to July 15, so knocking the plants down prior to seed maturation and dispersal can help control the invading plants.

Additionally, more effective weed control can be achieved by removing the overstory of grass, allowing the tap-rooted noxious weeds to regrow, then applying a herbicide treatment. The grass will not regrow as quickly as the forb (weed) species, and the spraying application will be more effective, especially going into the fall season when the thistle plants are storing their root reserves for the winter dormant period.

Early haying to encourage tillering can shorten the establishment period of new grass seedings. Obtaining the best stand of grass in the shortest time period possible will increase wildlife use and minimize the need for weed control in subsequent years.

As such, it is concluded that the accrued benefits of more effective weed control and shorter establishment periods more than compensate for the potential short-term loss associated with authorized weed control and plant density management accomplished by haying the grassland area prior to July 15.

Mandatory 10-Year Reevaluation Date:

10 years from the date of APPROVAL signature

Enter date: _____

Signatures:

Submitted: Michael J. Bryant 3/10/2005
 Michael Bryant, Project Leader Date
 Lake Andes WMD

Thomas R. Tornow 3-10-05
 Tom Tornow, Project Leader Date
 Madison WMD

Harris J. Horstad 3-10-05
 Harris Horstad, Project Leader Date
 Huron WMD

Larry D. Martin 3-10-05
 Larry Martin, Project Leader Date
 Waubay WMD

Gene Williams 3-10-05
 Gene Williams, Project Leader Date
 Sand Lake WMD

Tom Koerner 3-10-05
 Tom Koerner, Project Leader Date
 Lacreek NWR

Jack Lalor 4/26/05
 Jack Lalor, Acting Project Leader Date
 Tewaukon WMD

Dave Azure 3-10-05
 Dave Azure, Acting Project Leader Date
 Kulm WMD

Kim D. Hanson 3/10/05
 Kim D. Hanson, Project Leader Date
 Arrowwood WMD
 Chase Lake WMD
 Valley City WMD

Gary Williams 3/10/05
 Gary Williams, Acting Project Leader Date
 Audubon WMD

Paul Van Ningen
 Paul Van Ningen, Project Leader
 Long Lake WMD
 3/10/2005
 Date

Tedd W. Gutzke
 Tedd Gutzke, Project Leader
 J. Clark Salyer WMD
 3/10/2005
 Date

Roger Hollevoet
 Roger Hollevoet, Project Leader
 Devils Lake WMD
 3/10/05
 Date

Fred G. Giese
 Fred G. Giese, Project Leader
 Lostwood WMD
 Crosby WMD
 04/26/05
 Date

Michael Rabenberg
 Michael Rabenberg, Acting Project Leader
 Medicine Lake WMD
 04/26/05
 Date

Carmen B. Luna
 Carmen Luna, Project Leader
 Bowdoin WMD
 4/26/05
 Date

David Gilland
 David Gilland, Project Leader
 Benton Lake WMD
 4/26/05
 Date

Steve W. Kallan
 Steve Kallan, Project Leader
 NW Montana WMD
 4/26/05
 Date

Review: Lloyd Jones
 Lloyd Jones
 Regional Compatibility Coordinator
 4-27-05
 Date

Steve Burt
 3/28/05
Rodney F. Krey
 Rodney Krey / Ref. Sup
 4/22/05

Approval: Ronald D. Shupe
 Ronald D. Shupe, Region 6
 Acting Chief of Refuges
 4/21/05
 Date

COMPATIBILITY DETERMINATION
for
the Cooperative Farming Program on
National Wildlife Refuges and Waterfowl Production Areas
for Management Purposes

Use: Cooperative farming on National Wildlife Refuges and Waterfowl Production Areas in North and South Dakota.

Station Names:

South Dakota Wetland Management Districts:

Lake Andes NWR and WMD, SD
Madison WMD, SD
Huron WMD, SD
Waubay NWR and WMD, SD
Sand Lake NWR and WMD, SD
LaCreek NWR and WMD, SD

North Dakota Wetland Management Districts:

Tewaukon NWR and WMD, ND
Kulm WMD, ND
Arrowwood NWR and WMD, ND
Valley City WMD, ND
Chase Lake NWR and WMD, ND
Audubon NWR and WMD, ND
Long Lake NWR and WMD, ND
J Clark Salyer NWR and WMD, ND
Devils Lake WMD, ND
Lostwood NWR and WMD, ND
Crosby WMD, ND
Des Lacs NWR, ND
Upper Souris NWR, ND

Establishing and Acquisition Authorities:

Arrowwood NWR; Executive Order (E.O.) 7168, Sept. 4, 1935
Audubon NWR; 16 USC §664 (Fish and Wildlife Coord. Act)
Chase Lake NWR; E.O. 932, Aug. 28, 1908
Des Lacs NWR; E.O. 7154-A, Aug. 22, 1935
Florence Lake NWR; E.O. 8119, May 10, 1939
J. Clark Salyer NWR; E.O. 7170, Sept. 4, 1935

Kellys Slough NWR; E.O. 7320, Mar. 19, 1936
 Lake Alice NWR; 16 USC § 715d (Mig. Bird Cons. Act)
 Lake Ilo NWR; E.O. 8154, June 12, 1939
 Lake Nettie NWR; E. O. 8155, June 12, 1939
 Lake Zahl NWR; E. O. 8158, June 12, 1939
 Long Lake NWR; E.O. 5808, Feb. 25, 1932
 Lostwood NWR; E.O. 7171, Sept. 4, 1935
 McLean NWR; 16 USC § 715d (Mig. Bird Cons. Act)
 Slade NWR; 16 USC 715d (Mig. Bird Cons. Act)
 Sullys Hill NGP; E. O. 3596, Dec. 22, 1921
 Tewaukon NWR; Public Land Order (PLO) 286, June 26, 1945
 Upper Souris NWR; E.O. 7161, Aug. 27, 1935

LaCreek NWR; E.O. 7160, Aug. 26, 1935
 Lake Andes NWR; E. O. 7292, Feb. 14, 1936
 Sand Lake NWR; E. O. 7169, Sept. 4, 1935
 Waubay NWR; E. O. 7245, Dec. 10, 1935

Waterfowl Production Areas, Wetland Easements, Grassland Easements - The Migratory Bird Hunting and Conservation Stamp Act, March 16, 1934, (16 USC Sec. 718-718h, 48 Stat. 452) as amended August 1, 1958, (PL 85-585; 72 Stat. 486) for acquisition of “Waterfowl Production Areas”; the Wetlands Loan Act, October 4, 1961, as amended (16 USC 715k-3 - 715k-5, Stat. 813), funds appropriated under the Wetlands Loan Act are merged with duck stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under the provisions of the Migratory Bird Conservation Act, February 18, 1929, (16 USC Sec. 715, 715d - 715r, as amended.

Refuge Purpose(s):

The Executive Orders for most of the refuges state the purpose “as a refuge and breeding ground for migratory birds and other wildlife.”

“...as Waterfowl Production Areas” subject to “...all of the provisions of such Act [Migratory Bird Conservation Act] ...except the inviolate sanctuary provisions...” 16 USC 718(c) (Migratory Bird Hunting and Conservation Stamp)

“...for any other management purpose, for migratory birds.” 16 USC 715d (Migratory Bird Conservation Act)

National Wildlife Refuge System Mission:

“The Mission of the National Wildlife Refuge System is to administer a national network

of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966, as amended) [16 USC 668(dd)-668(ee)].

Description of Use:

Cooperative farming is the term used for cropping activities done by a third party on lands that are owned in fee-title by the U. S. Fish and Wildlife Service (Service) or controlled by the Service through a conservation easement (wetland, grassland, or FmHA). This activity is usually done on a short-term basis (3-4 years or less) to provide an optimum seed bed for the establishment of native grasses and forbs or other more desirable planted cover for wildlife. Cooperative farming may also be used on certain tracts to provide a fall food source for migratory waterfowl or a winter food source for resident wildlife.

The farming is done under the terms and conditions of a Cooperative Farming Agreement or Special Use Permit (SUP) issued by the Project Leader, Refuge Manager, or Wetland District Manager. Terms of the agreement insure that all current Service and District restrictions are followed.

Cooperative farming activities are generally limited to areas of former cropland or poor quality stands of tame or cool season exotic grasses. Service policies do not allow highly erodible soils to be tilled or cropped without an approved NRCS Conservation Plan. Waterfowl Production Areas (WPAs) in the Dakotas average about 200 acres in size. Generally, areas to be cooperatively farmed at one time prior to reseeding to more desirable plant species will not be more than 50 percent of the tract. Areas on WPAs and Refuges planted for food plots will be limited to the size needed to provide sufficient food for the targeted wildlife species.

Availability of Resources:

Staff time for development and administration of Cooperative Farming Agreements is already available. Most of the needed field work to prepare and plan for this use would be done as part of routine grassland management duties. The decision to use a cooperating farmer would occur as part of the overall strategy for managing lands on the Refuge or within the WMD. The additional time needed to coordinate issuance of the SUP or Cooperative Farming Agreement and oversight of the permit is relatively minor and within Refuge or WMD resources. In addition, the use of a cooperating farmer frees up other staff time from conducting the farming operation through force account.

Cooperative farming of Service lands in most cases is done on a share basis rather than for a fee. The Service typically receives its share as harvested grain used for other management purposes, as standing grain left for wildlife food, or as additional work such as

weed control, cultivation, or additional seed bed preparation, or for supplies such as herbicide or grass seed to be used on the same tract of land. Any fees or cash income received by the Service would be deposited in the Refuge Revenue Sharing Account. The Service will receive fair market value consideration from cooperating farmers, but the generation of income is a secondary consideration when developing the terms and conditions of a cooperative farming agreement or SUP.

To lessen any appearance of favoritism or impropriety, managers should follow Refuge Manual procedures for establishing rental rates and cooperator selection.

Anticipated Impacts of the Use:

Cooperative farming to prepare suitable seed beds for planting better cover and habitat will result in short-term disturbances and long-term benefits to both resident and migratory wildlife using the Refuges, WPAs, and easements. Short-term impacts include disturbance and displacement of wildlife typical of any noisy heavy equipment operation, and the loss of poor quality cover while the tract is farmed. Wildlife may also use the farmed area as an additional food source for the period which it is farmed. Long-term benefits are extremely positive due to the establishment of diverse or more desirable habitat for nesting, escape cover, perching, or non-crop feeding activities. The resulting habitat will generally improve conditions for most of the species negatively affected by the short period of farming activity.

In 2004, approximately 2900 acres of Service lands were farmed under SUPs in South Dakota. North Dakota refuges and WPAs permitted an average of 6,400 acres of cooperative farming during the 1996-2000 period.

Public Review and Comment:

The period of public review and comment began May 1, 2005 and ended on May 14, 2005.

Notices were posted in public places at each of the field stations listed on this Compatibility Determination. This method was selected because the proposed activity is considered minor, incidental, infrequent, with only short-term disturbance.

Determination:

Compatibility Threshold: As this activity is an economic use, it must meet the compatibility threshold of “contributing to the Mission and Purposes” of the Refuge System and the Refuge Area. Cooperative farming is used to benefit Refuge and Waterfowl Production Area uplands and the migratory birds and other wildlife that use these lands.

_____ Use is Not Compatible

XXX Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. SUPs or Cooperative Farming Agreements will specify the type of crop to be planted and describe the refuges' share.
2. The SUP may specify any herbicide or agricultural restrictions of the tract.
3. The SUP may specify timing constraints to insure that the proper field work is completed at the appropriate time.
4. The permit is issued subject to the revocation and appeals procedure contained in Title 50, Part 25 of the Code of Federal Regulations.

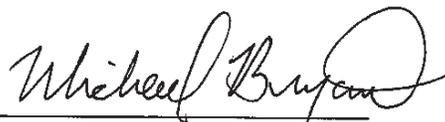
Justification:

The cooperative farming of Service lands or easements is done to develop or reseed better wildlife cover and habitat than was previously on the area. Only areas that have been previously cropped, or are seeded to decadent stands of cool season grasses (brome or crested wheatgrass), or decadent tame grass-legume mixes will be included in a cooperative farming plan. Cooperative farming in most cases provides the fastest, most cost effective means to establish native grasses or re-seeded cover on the Service property. In many cases, tracts are located many miles away from the Refuge or WMD headquarters, making force account labor a very time-consuming effort. The long-term benefits of managed, quality cover offset the short-term impacts and disturbance while the tract is farmed prior to seeding or re-seeding.

Mandatory 10-Year Reevaluation Date: 10 years from the date of APPROVAL signature

Signatures:

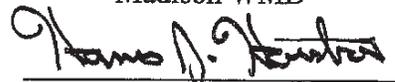
Submitted:


Michael Bryant, Project Leader
Lake Andes Complex

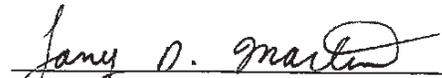
4/26/03
Date


 Tom Tornow, Project Leader
 Madison WMD

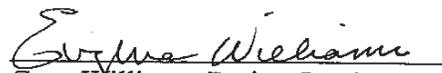
4-26-05
 Date


 Harris Hoistad, Project Leader
 Huron WMD

4-26-05
 Date


 Larry Martin, Project Leader
 Waubay Complex

26 April 2005
 Date


 Gene Williams, Project Leader
 Sand Lake Complex

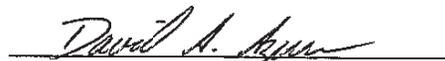
4-26-05
 Date


 Tom Koerner, Project Leader
 LaCreek Complex

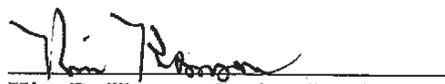
4-26-05
 Date


 Jack Lalor, Acting Project Leader
 Tewaukon Complex

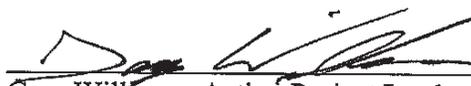
4/26/05
 Date


 Dave Azure, Acting Project Leader
 Kulm WMD

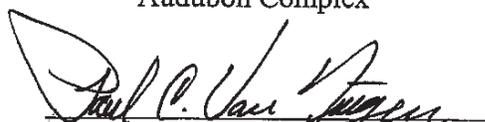
4/26/05
 Date


 Kim D. Hanson, Project Leader
 Arrowwood Complex
 Chase Lake WMD
 Valley City WMD

4/26/05
 Date


 Gary Williams, Acting Project Leader
 Audubon Complex

4/26/05
 Date


 Paul Van Ningen, Project Leader
 Long Lake Complex

4/26/05
 Date

Theodore Gutzke
Tedd Gutzke, Project Leader
J Clark Salyer Complex

April 26, 2005
Date

R. Hollevoet
Roger Hollevoet, Project Leader
Devils Lake Complex

4/26/05
Date

Fred G. Giese
Fred G. Giese, Project Leader
Des Lacs Complex

04/26/05
Date

Dean Knauer
Dean Knauer, Project Leader
Upper Souris NWR

4-27-05
Date

Review:

Lloyd Jones
Lloyd Jones
Regional Compatibility Coordinator

4.27.05
Date

Rodney F. Krey
Rod Krey
Refuge Supervisor, ND-SD

4/28/05
Date

Approval:

Ronald D. Shupe
Ronald D. Shupe, Region 6
Acting Chief of Refuges

May 15, 2005
Date

COMPATIBILITY DETERMINATION
for
Prescribed Haying of Grasslands
on National Wildlife Refuges and Waterfowl Production Areas
for Management Purposes

Use: Prescribed Haying of Grasslands on National Wildlife Refuges and Waterfowl Production Areas in North and South Dakota.

Station Names:

South Dakota Refuges and Wetland Management Districts:

Lake Andes NWR and WMD, SD
 Madison WMD, SD
 Huron WMD, SD
 Waubay NWR and WMD, SD
 Sand Lake NWR and WMD, SD
 LaCreek NWR and WMD, SD

North Dakota Refuges and Wetland Management Districts:

Tewaukon NWR and WMD, ND
 Kulm WMD, ND
 Arrowwood NWR and WMD, ND
 Valley City WMD, ND
 Chase Lake NWR and WMD, ND
 Audubon NWR and WMD, ND
 Long Lake NWR and WMD, ND
 J Clark Salyer NWR and WMD, ND
 Devils Lake WMD, ND
 Lostwood NWR and WMD, ND
 Crosby WMD, ND
 Des Lacs NWR, ND
 Upper Souris NWR, ND

Establishing and Acquisition Authorities:

Arrowwood NWR; Executive Order (E.O.) 7168, Sept. 4, 1935
 Audubon NWR; 16 USC §664 (Fish and Wildlife Coord. Act)
 Chase Lake NWR; E.O. 932, Aug. 28, 1908
 Des Lacs NWR; E.O. 7154-A, Aug. 22, 1935
 Florence Lake NWR; E.O. 8119, May 10, 1939

J. Clark Salyer NWR; E.O. 7170, Sept. 4, 1935
Kellys Slough NWR; E.O. 7320, Mar. 19, 1936
Lake Alice NWR; 16 USC § 715d (Mig. Bird Cons. Act)
Lake Ilo NWR; E.O. 8154, June 12, 1939
Lake Nettie NWR; E. O. 8155, June 12, 1939
Lake Zahl NWR; E. O. 8158, June 12, 1939
Long Lake NWR; E.O. 5808, Feb. 25, 1932
Lostwood NWR; E.O. 7171, Sept. 4, 1935
McLean NWR; 16 USC § 715d (Mig. Bird Cons. Act)
Slade NWR; 16 USC 715d (Mig. Bird Cons. Act)
Sullys Hill NGP; E. O. 3596, Dec. 22, 1921
Tewaukon NWR; Public Land Order (PLO) 286, June 26, 1945
Upper Souris NWR; E.O. 7161, Aug. 27, 1935

LaCreek NWR; E.O. 7160, Aug. 26, 1935
Lake Andes NWR; E. O. 7292, Feb. 14, 1936
Sand Lake NWR; E. O. 7169, Sept. 4, 1935
Waubay NWR; E. O. 7245, Dec. 10, 1935

Waterfowl Production Areas, Wetland Easements, Grassland Easements - The Migratory Bird Hunting and Conservation Stamp Act, March 16, 1934, (16 USC Sec. 718-718h, 48 Stat. 452) as amended August 1, 1958, (PL 85-585; 72 Stat. 486) for acquisition of "Waterfowl Production Areas"; the Wetlands Loan Act, October 4, 1961, as amended (16 USC 715k-3 - 715k-5, Stat. 813), funds appropriated under the Wetlands Loan Act are merged with duck stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under the provisions of the Migratory Bird Conservation Act, February 18, 1929, (16 USC Sec. 715, 715d - 715r, as amended.

Refuge Purpose(s):

The Executive Orders for most of the refuges state the purpose "as a refuge and breeding ground for migratory birds and other wildlife."

"...as Waterfowl Production Areas" subject to "...all of the provisions of such Act [Migratory Bird Conservation Act] ...except the inviolate sanctuary provisions..." 16 USC 718(c) (Migratory Bird Hunting and Conservation Stamp)

"...for any other management purpose, for migratory birds." 16 USC 715d (Migratory Bird Conservation Act)

National Wildlife Refuge System Mission:

“The Mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966, as amended) [16 USC 668(dd)-668(ee)].

Description of Use:

Haying is the cutting and removal, by baling and transport to an off-site location, of grass or other upland vegetation for the production of livestock forage. Haying for this purpose is typically done by a cooperating farmer acting under authority of a Cooperative Farming Agreement or Special Use Permit (SUP) issued by the Project Leader, Refuge Manager or Wetland District Manager.

Haying is an effective management tool as part of an overall grassland management plan to improve and maintain Fish and Wildlife Service (Service)-managed grasslands for the benefit of migratory birds and other wildlife. Grasslands require periodic renovation to maintain vigor, diversity, and the structure necessary for migratory bird nesting. Haying can be an alternative to prescribed burning or grazing, which are the two other methods used to manage grassland habitats. If local conditions preclude the use of prescribed fire, or livestock numbers are not available, removal of biomass through haying serves to reduce unwanted overstory, reduce woody plant invasion, and open the soil surface up to sunlight. Such removal of vegetation allows for more vigorous regrowth of desirable species following the haying although results are neither as dramatic nor positive as with fire or grazing.

Haying may also be used as part of a native grass seeding strategy on newly acquired lands or on tame grass stands on older lands needing renovation. To reduce weed or undesirable species competition and minimize herbicide applications, a cooperating farmer may be used to seed the native grass seed mix and interseed with a cover crop. As a requirement of the SUP, the cooperator would be required to cut, bale, and remove the cover crop before it matures and goes to seed. The resultant hay can be used for livestock feed and haying serves the biological purpose of releasing young native grass and forb seedlings for growth with minimal competition.

A third possible use of haying on FWS-managed grasslands involves the initial steps of removing unwanted vegetation prior to seeding the tract to native grasses. Haying of a nonnative cool season stand of grass is an effective step in advance of spraying the field with herbicide to kill all existing vegetation. Removal of the heavy grass overstory by haying allows the herbicide to more effectively reach and treat the remaining target plants. Better removal of the unwanted grasses will in turn ensure better success of the planted grasses and forbs whether they are interseeded into the sod or into the soil turned over and leveled prior to seeding.

Haying is sometimes used prior to a noxious weed treatment; the tract is hayed and after a period of time, the “flush” of noxious weeds is treated with a herbicide application. Removing the vegetation through haying allows the herbicide to more effectively reach and treat the target weeds.

A more limited application of haying on FWS-managed lands involves its use for establishing fire breaks for prescribed burning. A cooperative farmer would be permitted to hay the firebreak strips in the fall. That area would then have little standing dead vegetation in the early spring, or would green up earlier in the spring and allow use as a fire break.

Prescribed haying in North Dakota averaged about 13,500 acres per year (1996-2000). In South Dakota, FWS managers use prescribed haying on about 2450 acres annually (2004 estimates).

Availability of Resources:

Financial and staff resources are determined to be sufficient at each field station to administer these requests. Staff time will be needed to evaluate the proposed use, to prepare the site-specific SUPs, and to insure compliance with the permit authorization and stipulations necessary to insure compatibility.

To lessen any appearance of favoritism or impropriety, managers should follow Refuge Manual procedures for establishing rental rates and cooperator selection.

Anticipated Impacts of the Use:

Haying will result in short-term disturbances to wildlife and long-term benefits to grasslands and the wildlife species that use these grasslands. Short-term impacts will include disturbance and displacement of wildlife typical of any noisy heavy equipment operation. Cutting and removal of standing grass will result in the short-term loss (late-summer to mid-summer the following year of habitat for those species requiring taller grass for feeding and perching. Prescribed haying will typically be scheduled after July 31 to avoid impacts to most nesting birds. Long-term benefits will accrue due to the increased vigor of the regrown grasses or the establishment of highly desirable native grass and forb species, which will improve habitat conditions for the same species affected by the short-term removal of the cover. Longer-term negative impacts may occur to some resident wildlife species such as pheasant that may lose overwinter habitat in hayed areas. Strict time constraints, and limiting grass stands to no more than 50 percent being hayed at any one time will limit the anticipated impacts to these areas.

Public Review and Comment:

The period of public review and comment began May 1, 2005 and ended on May 14, 2005.

Notices were posted in public places at each of the field stations listed on this Compatibility Determination. This method was selected because the proposed activity is considered minor, incidental, infrequent, with only short-term disturbance.

Determination:

Compatibility Threshold: As this activity is an economic use, it must meet the compatibility threshold of “contributing to the Mission and Purposes” of the Refuge System and the Refuge Area. Prescribed haying is used to benefit Refuge and Waterfowl Production Area grasslands and the migratory birds and other wildlife that use these grasslands.

_____ Use is Not Compatible

XXX Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. Prescribed haying will generally not take place before August 1 in any given year, unless there are documented management reasons for prescribing an earlier hay date.
2. The permit is issued subject to the revocation and appeals procedure contained in Title 50, Part 25 of the Code of Federal Regulations.
3. Generally, not more than 50 percent of a tract may be hayed in any one year, unless size restrictions or habitat conditions warrant haying of more than half of the area.
4. Prescribed haying can be coupled with a light discing or dragging operation, or an interseeding of desirable species of grass or legumes to further increase the vigor of the grass stand.
5. Bales or stacks must be removed from the area by September 10.

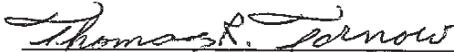
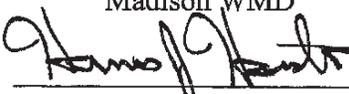
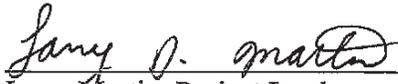
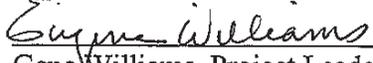
Justification:

Haying will not materially interfere with or detract from the purposes for which these NWRS lands were acquired or established. Haying creates temporary disturbance to vegetation. This disturbance is desirable for grassland management. Haying produces an undesirable but short-term impact to grassland nesting birds and site aesthetics. In the long-term, haying increases grassland vigor, species diversity, and habitat quality. Haying is an alternative management tool that can be used to replace or compliment prescribed burning, mowing, or grazing of Service grasslands. Without periodic disturbance caused by haying, burning, or grazing, the health of the grassland community would decline, as would an areas potential for waterfowl and other migratory bird nesting.

Mandatory 10-Year Reevaluation Date: 10 years from the date of APPROVAL signature

Signatures:

Submitted:

<p> Michael Bryant, Project Leader Lake Andes Complex</p>	<p><u>4/26/05</u> Date</p>
<p> Tom Tornow, Project Leader Madison WMD</p>	<p><u>4-26-05</u> Date</p>
<p> Harris Hoistad, Project Leader Huron WMD</p>	<p><u>4-26-05</u> Date</p>
<p> Larry Martin, Project Leader Waubay Complex</p>	<p><u>26 April 2005</u> Date</p>
<p> Gene Williams, Project Leader Sand Lake Complex</p>	<p><u>4-26-05</u> Date</p>
<p> Tom Koerner, Project Leader LaCreek Complex</p>	<p><u>4-26-05</u> Date</p>



Jack Lalor, Acting Project Leader
Tewaukon Complex

4/26/05

Date



Dave Azure, Acting Project Leader
Kulim WMD

4/26/05

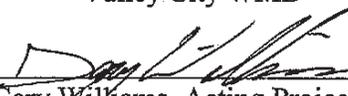
Date



Kim D. Hanson, Project Leader
Arrowwood Complex
Chase Lake WMD
Valley City WMD

4/26/05

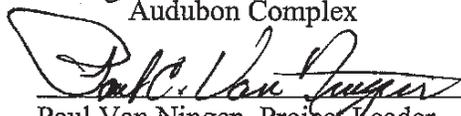
Date



Gary Williams, Acting Project Leader
Audubon Complex

4/26/05

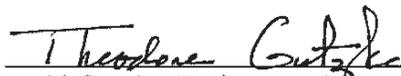
Date



Paul Van Ningen, Project Leader
Long Lake Complex

4/26/05

Date



Tedd Gutzke, Project Leader
J Clark Salyer Complex

April 26, 2005

Date



Roger Hollevoet, Project Leader
Devils Lake Complex

4/26/05

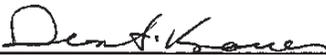
Date



Fred G. Giese, Project Leader
Des Lacs NWR
Lostwood WMD
Crosby WMD

04/26/05

Date

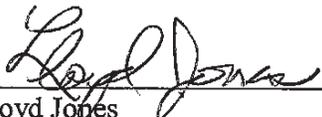


Dean Knauer, Project Leader
Upper Souris NWR

04-27-05

Date

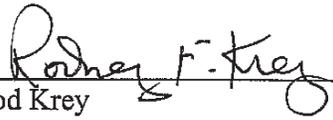
Review:



Lloyd Jones
Regional Compatibility Coordinator

4-27-05

Date

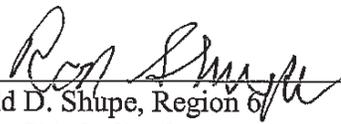


Rod Krey
Refuge Supervisor, ND-SD

4/28/05

Date

Approval:



Ronald D. Shupe, Region 6
Acting Chief of Refuges

May 15, 2005

Date

COMPATIBILITY DETERMINATION
for
Prescribed Grazing on
National Wildlife Refuges and Waterfowl Production Areas
for Management Purposes

Use: Prescribed grazing on National Wildlife Refuges and Waterfowl Production Areas in North and South Dakota.

Station Names:

South Dakota Refuges and Wetland Management Districts:

Lake Andes NWR and WMD, SD
 Madison WMD, SD
 Huron WMD, SD
 Waubay NWR and WMD, SD
 Sand Lake NWR and WMD, SD
 LaCreek NWR and WMD, SD

North Dakota Refuges and Wetland Management Districts:

Tewaukon NWR and WMD, ND
 Kulm WMD, ND
 Arrowwood NWR and WMD, ND
 Valley City WMD, ND
 Chase Lake NWR and WMD, ND
 Audubon NWR and WMD, ND
 Long Lake NWR and WMD, ND
 J Clark Salyer NWR and WMD, ND
 Devils Lake WMD, ND
 Lostwood NWR and WMD, ND
 Crosby WMD, ND
 Des Lacs NWR, ND
 Upper Souris NWR, ND

Establishing and Acquisition Authorities:

Arrowwood NWR; Executive Order (E.O.) 7168, Sept. 4, 1935
 Audubon NWR; 16 USC §664 (Fish and Wildlife Coord. Act)
 Chase Lake NWR; E.O. 932, Aug. 28, 1908
 Des Lacs NWR; E.O. 7154-A, Aug. 22, 1935
 Florence Lake NWR; E.O. 8119, May 10, 1939

J. Clark Salyer NWR; E.O. 7170, Sept. 4, 1935
Kellys Slough NWR; E.O. 7320, Mar. 19, 1936
Lake Alice NWR; 16 USC § 715d (Mig. Bird Cons. Act)
Lake Ilo NWR; E.O. 8154, June 12, 1939
Lake Nettie NWR; E. O. 8155, June 12, 1939
Lake Zahl NWR; E. O. 8158, June 12, 1939
Long Lake NWR; E.O. 5808, Feb. 25, 1932
Lostwood NWR; E.O. 7171, Sept. 4, 1935
McLean NWR; 16 USC § 715d (Mig. Bird Cons. Act)
Slade NWR; 16 USC 715d (Mig. Bird Cons. Act)
Sullys Hill NGP; E. O. 3596, Dec. 22, 1921
Tewaukon NWR; Public Land Order (PLO) 286, June 26, 1945
Upper Souris NWR; E.O. 7161, Aug. 27, 1935

LaCreek NWR; E.O. 7160, Aug. 26, 1935
Lake Andes NWR; E. O. 7292, Feb. 14, 1936
Sand Lake NWR; E. O. 7169, Sept. 4, 1935
Waubay NWR; E. O. 7245, Dec. 10, 1935

Waterfowl Production Areas, Wetland Easements, Grassland Easements - The Migratory Bird Hunting and Conservation Stamp Act, March 16, 1934, (16 USC Sec. 718-718h, 48 Stat. 452) as amended August 1, 1958, (PL 85-585; 72 Stat. 486) for acquisition of "Waterfowl Production Areas"; the Wetlands Loan Act, October 4, 1961, as amended (16 USC 715k-3 - 715k-5, Stat. 813), funds appropriated under the Wetlands Loan Act are merged with duck stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under the provisions of the Migratory Bird Conservation Act, February 18, 1929, (16 USC Sec. 715, 715d - 715r, as amended.

Refuge Purpose(s):

The Executive Orders for most of the refuges state the purpose "as a refuge and breeding ground for migratory birds and other wildlife."

"...as Waterfowl Production Areas" subject to "...all of the provisions of such Act [Migratory Bird Conservation Act] ...except the inviolate sanctuary provisions..." 16 USC 718(c) (Migratory Bird Hunting and Conservation Stamp)

"...for any other management purpose, for migratory birds." 16 USC 715d (Migratory Bird Conservation Act)

National Wildlife Refuge System Mission:

“The Mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966, as amended) [16 USC 668(dd)-668(ee)].

Description of Use:

Prescribed grazing is the use of livestock, usually cattle, to remove standing vegetation, reduce vegetative litter, suppress woody vegetation or noxious weeds, open up vegetation-choked wetlands, or open up areas to sunlight and encourage native grass seedlings and growth. Prescribed grazing is carefully timed, and usually of short duration (usually 2-4 weeks), to target certain species for grazing impacts in order to benefit other species for growth after the competing vegetation has been removed.

The prescribed grazing period generally will take place between April and September. Early spring grazing (mid-April through late May) is targeted at cool season exotic species and encourages warm season native grasses and forbs. Mid-season grazing (June and July), especially on non-native grasslands, stimulates fall regrowth. Late-season grazing (August and September) removes litter and encourages spring growth of cool season natives or other cool season species.

Fence construction and maintenance, often temporary electric fence, and control and rotation of the livestock, are the responsibility of cooperating private party. Market rate grazing fees are determined by the Regional Office, but may include standard deductions for fence construction and maintenance, frequent livestock rotations, construction of water gaps, or hauling/providing additional water in dry pastures.

The frequency and duration of prescribed grazing on any Refuge or WPA will be based on site-specific evaluations of the grassland being managed.

Availability of Resources:

Developing grazing plans and Special Use Permits (SUPs) and monitoring compliance and biological effects requires some Service resources. Most grazing management costs; fencing labor, monitoring and moving the livestock, hauling water; are provided by the cooperator or permittee. Evaluating the grasslands for grazing prescriptions and grassland response is already a part of the stations grassland management responsibilities. Some alternative form of grassland management, prescribed burning or haying, may be used if the areas are not treated with prescribed grazing. Managing grasslands through permitted haying has comparable costs to managing a prescribed grazing program. Managed mowing is more expensive since all the labor costs are assumed by the Service. Prescribed burning can be an effective grassland management tool, but there are personnel and weather

limitations on a burning program, as well the fact the some tracts are just not suited to burning management. In addition, there is an ecological benefit to rotating grassland management techniques, such as grazing, burning, and haying, at different seasons, rather than just relying on one technique.

Anticipated Impacts of the Use:

Grazing by domestic livestock has the short-term effect of removing some or much of the standing vegetation from a tract of grassland. Properly prescribed, the effect of this removal of vegetation increases the vigor of the grassland, stimulates the growth of desired species of grass and forbs, and reduces the abundance of targeted species such as cool season exotics, woody species, noxious weeds or invasive species, or cattails. Grazing in the spring may cause the loss of some bird nests due to trampling, and may cause some birds not to nest in areas being grazed. Grazing on public wildlife lands can create an aesthetic issue of concern for some people or visitors who do not understand grassland management. Prescribed grazing is usually of short duration and enhanced, most diverse and vigorous grassland habitats are the end result. Grazing livestock may create a minor and temporary disturbance to wildlife but generally do no harm. There is a slight potential for conflict between the visiting public and the livestock or the permittee, particularly during fall hunting seasons. These situations can be limited by having the livestock removed by the anticipated beginning of fall hunting seasons.

In 2004, prescribed grazing occurred on approximately 17,500 acres of Refuges and WPAs in South Dakota (202,000 fee acres). During the 1996-2000 period, approximately 39,700 acres of grasslands on North Dakota Refuges and WPAs (470,000 fee acres) were treated annually by prescribed grazing treatments.

To eliminate any appearance of favoritism or impropriety, managers should follow Refuge Manual procedures for cooperator or permittee selection.

Public Review and Comment:

The period of public review and comment began May 1, 2005 and ended on May 14, 2005.

Notices were posted in public places at each of the field stations listed on this Compatibility Determination. This method was selected because the proposed activity is considered minor, incidental, infrequent, with only short-term disturbance.

Determination:

Compatibility Threshold: As this activity is an economic use, it must meet the compatibility threshold of “contributing to the Mission and Purposes” of the Refuge System and the Refuge Area. Prescribed grazing is used to improve and manage grassland habitats

on Refuges and Waterfowl Production Areas and the migratory birds and other wildlife that use these habitats.

_____ Use is Not Compatible

XXX Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

1. SUPs will specify the stocking rate, dates of use, and timing for each unit or grazing cell on the Refuge or WPA.
2. The standard grazing fee, as determined for each state by the Regional Office, and any standard deductions for any labor or work done on the Service lands will be included on the SUP.
3. Grazing permittees must comply with all applicable State Livestock Health laws.
4. No supplemental feeding will be allowed without authorization from the Project Leader/Manager.
5. Control and confinement of livestock will be the responsibility of the permittee.
6. The permit is issued subject to the revocation and appeals procedure contained in Title 50, Part 25 of the Code of Federal Regulations.

Justification:

Controlled grazing by domestic livestock will not materially interfere or detract from the purposes for which these NWRS lands were acquired or established. Prescribed livestock grazing creates temporary disturbances to vegetation. Many of these disturbances are desirable for grassland management. Grazing produces an undesirable but short-term impact to grassland nesting birds and site aesthetics. In the long-term, prescribed grazing increases grassland vigor, species diversity, and habitat quality. Prescribed grazing is an alternative management tool that can be used to replace or complement prescribed burning, mowing, or haying of Service grasslands. Without periodic disturbance caused by haying, burning, or grazing, the health of the grassland community would decline, as would an areas potential for waterfowl and other migratory bird nesting.

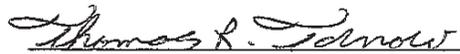
Mandatory 10-Year Reevaluation Date: 10 years from the date of APPROVAL signature

Signatures:

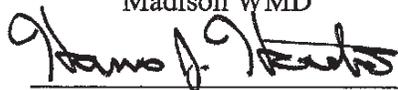
Submitted:


Michael Bryant, Project Leader
Lake Andes Complex

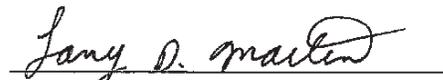
4/26/05
Date


Tom Tornow, Project Leader
Madison WMD

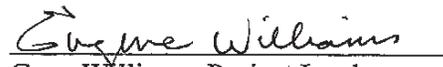
4-26-05
Date


Harris Hoistad, Project Leader
Huron WMD

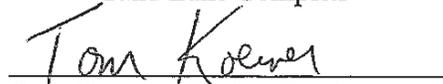
4-26-05
Date


Larry Martin, Project Leader
Waubay Complex

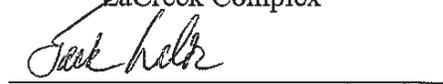
26 April 2005
Date


Gene Williams, Project Leader
Sand Lake Complex

4-26-05
Date


Tom Koerner, Project Leader
LaCreek Complex

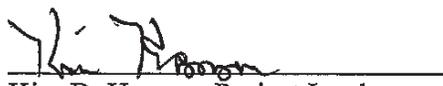
4-26-05
Date


Jack Lalor, Acting Project Leader
Tewaukon Complex

4/26/05
Date


Dave Azure, Acting Project Leader
Kulm WMD

4/26/05
Date

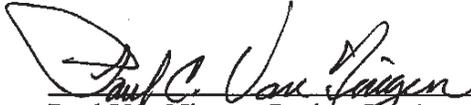

Kim D. Hanson, Project Leader
Arrowwood NWR
Chase Lake WMD
Valley City WMD

4/24/05
Date


 Gary Williams, Acting Project Leader
 Audubon Complex

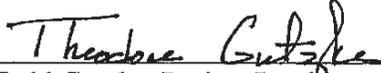
Date

4/26/05


 Paul Van Ningen, Project Leader
 Long Lake Complex

Date

4/26/05


 Tedd Gutzke, Project Leader
 J Clark Salyer Complex

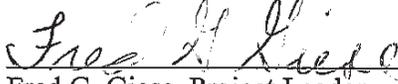
Date

April 26, 2005


 Roger Hollevoet, Project Leader
 Devils Lake Complex

Date

4/26/05


 Fred G. Giese, Project Leader
 Des Lacs NWR
 Lostwood WMD
 Crosby WMD

Date

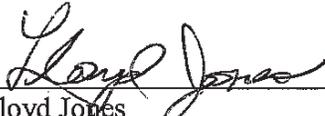
04/26/05


 Dean Knauer, Project Leader
 Upper Souris NWR

Date

4-27-05

Review:


 Lloyd Jones
 Regional Compatibility Coordinator

Date

4-27-05


 Rod Krey
 Refuge Supervisor, ND-SD

Date

4/28/05

Approval:



Ronald D. Shupe, Region 6
Acting Chief of Refuges

Date May 15, 2005

Appendix B

Key Legislation and Policies

This appendix briefly describes the guidance for the National Wildlife Refuge System and other policies and key legislation that guide the management of the Huron, Madison, and Sand Lake Wetland Management Districts.

B.1 National Wildlife Refuge System

The mission of the Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

(National Wildlife Refuge System Improvement Act of 1997)

GOALS

- Fulfill our statutory duty to achieve refuge purpose(s) and further the System mission.
- Conserve, restore where appropriate, and enhance all species of fish, wildlife, and plants that are endangered or threatened with becoming endangered.
- Perpetuate migratory bird, interjurisdictional fish, and marine mammal populations.
- Conserve a diversity of fish, wildlife, and plants.
- Conserve and restore, where appropriate, representative ecosystems of the United States, including the ecological processes characteristic of those ecosystems.
- Foster understanding and instill appreciation of fish, wildlife, and plants, and their conservation, by providing the public with safe, high-quality, and compatible wildlife-dependent public use. Such use includes hunting, fishing, wildlife observation and photography, and environmental education and interpretation.

GUIDING PRINCIPLES

There are four guiding principles for management and general public use of the Refuge System established by Executive Order 12996 (1996):

- **Public Use**—The Refuge System provides important opportunities for compatible wildlife-dependent recreational activities involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation.
- **Habitat**—Fish and wildlife will not prosper without high-quality habitat, and without fish and wildlife, traditional uses of refuges cannot be sustained. The Refuge System will continue to conserve and enhance the quality and diversity of fish and wildlife habitat within refuges.
- **Partnerships**—America’s sportsmen and women were the first partners who insisted on protecting valuable wildlife habitat within wildlife refuges. Conservation partnerships with other Federal agencies, State agencies, tribes, organizations, industry, and the general public can make significant contributions to the growth and management of the Refuge System.
- **Public Involvement**—The public should be given a full and open opportunity to participate in decisions regarding acquisition and management of our national wildlife refuges.

B.2 Legal and Policy Guidance

Management actions on national wildlife refuges and wetland management districts are circumscribed by many mandates including laws and executive orders, the latest of which is the Volunteer and Community Partnership Enhancement Act of 1998. Regulations that affect refuge management the most are listed below.

American Indian Religious Freedom Act (1978)—Directs agencies to consult with native traditional religious leaders to determine appropriate policy changes necessary to protect and preserve Native American religious cultural rights and practices.

Americans with Disabilities Act (1992)—Prohibits discrimination in public accommodations and services.

Antiquities Act (1906)—Authorizes the scientific investigation of antiquities on Federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

Archaeological and Historic Preservation Act (1974)—Directs the preservation of historic and archaeological data in Federal construction projects.

Archaeological Resources Protection Act (1979), as amended—Protects materials of archaeological interest from unauthorized removal or destruction and requires Federal managers to develop plans and schedules to locate archaeological resources.

Architectural Barriers Act (1968)—Requires federally owned, leased, or funded buildings and facilities to be accessible to persons with disabilities.

Clean Water Act (1977)—Requires consultation with the U.S. Army Corps of Engineers (404 permits) for major wetland modifications.

Endangered Species Act (1973)—Requires all Federal agencies to carry out programs for the conservation of endangered and threatened species.

Executive Order 11988 (1977)—Requires Federal agencies to provide leadership and take action to reduce the risk of flood loss, minimize the impact of floods on human safety, and preserve the natural and beneficial values served by the floodplains.

Executive Order 12996, Management and General Public Use of the National Wildlife Refuge System (1996)—Defines the mission, purpose, and priority public uses of the National Wildlife Refuge System. It also presents four principles to guide management of the Refuge System.

Executive Order 13007, Indian Sacred Sites (1996)—Directs Federal land management agencies to accommodate access to and ceremonial uses of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.

Federal Noxious Weed Act (1990)—Requires the use of integrated management systems to control or contain undesirable plant species and an interdisciplinary approach with the cooperation of other Federal and State agencies.

Federal Records Act (1950)—Requires the preservation of evidence of the government's organization, functions, policies, decisions, operations, and activities, as well as basic historical and other information.

Fish and Wildlife Coordination Act (1958)—Allows the U.S. Fish and Wildlife Service to enter into agreements with private landowners for wildlife management purposes.

Migratory Bird Conservation Act (1929)—Establishes procedures for acquisition by purchase, rental, or gifts

of areas approved by the Migratory Bird Conservation Commission.

Migratory Bird Hunting and Conservation Stamp Act (1934)—Authorizes the opening of part of a refuge to waterfowl hunting.

Migratory Bird Treaty Act (1918)—Designates the protection of migratory birds as a Federal responsibility; and enables the setting of seasons and other regulations, including the closing of areas, Federal or non-Federal, to the hunting of migratory birds.

National Environmental Policy Act (1969)—Requires all agencies, including the Service, to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in the planning and implementation of all actions. Federal agencies must integrate this Act with other planning requirements, and prepare appropriate documents to facilitate better environmental decision making. [From the Code of Federal Regulations (CFR), 40 CFR 1500]

National Historic Preservation Act (1966), as amended—Establishes as policy that the Federal Government is to provide leadership in the preservation of the Nation's prehistoric and historical resources.

National Wildlife Refuge System Administration Act (1966)—Defines the National Wildlife Refuge System and authorizes the Secretary of the Interior to permit any use of a refuge, provided such use is compatible with the major purposes for which the refuge was established.

National Wildlife Refuge System Improvement Act of 1997—Sets the mission and administrative policy for all refuges in the National Wildlife Refuge System; mandates comprehensive conservation planning for all units of the Refuge System.

Native American Graves Protection and Repatriation Act (1990)—Requires Federal agencies and museums to inventory, determine ownership of, and repatriate cultural items under their control or possession.

Refuge Recreation Act (1962)—Allows the use of refuges for recreation when such uses are compatible with the refuge's primary purposes and when sufficient funds are available to manage the uses.

Rehabilitation Act (1973)—Requires programmatic accessibility in addition to physical accessibility for all facilities and programs funded by the Federal Government to ensure that any person can participate in any program.

Rivers and Harbors Act (1899)—Section 10 of this Act requires the authorization of U.S. Army Corps of Engineers prior to any work in, on, over, or under navigable waters of the United States.

Volunteer and Community Partnership Enhancement Act (1998)—Encourages the use of volunteers to assist in the management of refuges within the Refuge System; facilitates partnerships between the Refuge System and non-Federal entities to promote public awareness of the resources of the Refuge System and public participation in the conservation of the resources; and encourages donations and other contributions.

Appendix C

Preparers and Contributors

This document is the result of the extensive, collaborative, and enthusiastic efforts by the members of the South Dakota Wetland Management District planning team below. Many others contributed insight and support.

CORE PLANNING TEAM

<i>Team member</i>	<i>Position</i>	<i>Work unit</i>
Todd Boonstra	Wildlife biologist (former)	Huron Wetland Management District
Clarke Dirks	Project Leader	Huron Wetland Management District
Mark Ely	Chief, GIS Division	USFWS Regional Office, Denver, Colorado
Bridgette Flanders	Wildlife Biologist (former)	Huron Wetland Management District
Bernardo Garza	Planning Team Leader	USFWS Regional Office, Denver, Colorado
Harris Hoistad	Project Leader	Huron Wetland Management District
John Jave	Deputy Project Leader (retired)	Sand Lake National Wildlife Refuge Complex
Kyle Kelsey	Wildlife Biologist	Madison Wetland Management District
Jay Peterson	Wetland Management District Manager	Sand Lake National Wildlife Refuge Complex
Bryan Schultz	Deputy Project Leader	Madison Wetland Management District
William Schultze	Wildlife Biologist	Sand Lake National Wildlife Refuge Complex
Thomas Tornow	Project Leader	Madison Wetland Management District
Sandra Uecker	Deputy Project Leader	Huron Wetland Management District
Gene Williams	Project Leader (retired)	Sand Lake National Wildlife Refuge Complex

ADDITIONAL PLANNING TEAM MEMBERS

<i>Team member</i>	<i>Position</i>	<i>Work unit</i>
Cindy Souders	Outdoor Recreational Program Specialist	USFWS Regional Office, Denver, Colorado
Mike Artmann	Wildlife Biologist / GIS	USFWS Regional Office, Denver, Colorado
Edward Meendering	Wetland Management District Manager	Valley City Wetland Management District

The Service would like to acknowledge the efforts of the following individuals and organizations toward the completion of this draft CCP and EA. The diversity, talents, and knowledge they contributed dramatically improved the vision and completeness of this document.

CONTRIBUTORS

<i>Team member</i>	<i>Position</i>	<i>Work unit</i>
Richard Coleman	Assistant Regional Director, Refuge System	USFWS Regional Office, Denver, Colorado
Manuel Oliveira	Deputy Assistant Regional Director, Refuge System	USFWS Regional Office, Denver, Colorado
David C. Lucas	Chief, Division of Refuge Planning	USFWS Regional Office, Denver, Colorado
Paul Cornes	Refuge Supervisor (North Dakota/South Dakota)	USFWS Regional Office, Denver, Colorado
Natoma Buskness	Deputy Refuge Supervisor (North Dakota/South Dakota)	USFWS Regional Office, Denver, Colorado
Meg VanNess	Regional Archaeologist	USFWS Regional Office, Denver, Colorado
Sheri Fetherman	Chief, Division of Education and Visitor Services	USFWS Regional Office, Denver, Colorado

<i>Team member</i>	<i>Position</i>	<i>Work unit</i>
Megan Estep	Chief Hydrologist	USFWS Regional Office, Denver, Colorado
Wayne King	Refuge Biologist	USFWS Regional Office, Denver, Colorado
Deb Parker	Writer-Editor, Division of Refuge Planning	USFWS Regional Office, Denver, Colorado
Richard Sterry	Regional Fire Planner	USFWS Regional Office, Denver, Colorado

Appendix D

Public Involvement

Public scoping was initiated for the Huron, Madison, and Sand Lake Wetland Management Districts in a notice of intent published in July 2008. The notice announced intent to prepare a comprehensive conservation plan (CCP) and environmental assessment (EA) for the districts and to obtain suggestions and information on the scope of issues to be considered in the planning process.

Eleven public meetings were held in various locations throughout eastern South Dakota between September 8 and 11, 2008. Numerous written, verbal, and emailed comments were received during the open comment period. Comments received identified biological, social, and economic concerns regarding the different aspects of management of these districts. The mailing list for the CCP and EA includes, but is not limited to, the following.

D.1 Federal Officials

U.S. Senator John Thune, Washington, DC
Senator Thune's Area Director, Pierre, South Dakota
U.S. Senator Tim Johnson, Washington, DC
Senator Johnson's Area Director, Pierre, South Dakota
U.S. Representative Stephanie Herseth Sandlin, Washington, DC
Representative Herseth Sandlin's Area Director, Pierre, South Dakota

D.2 Federal Agencies

Bureau of Reclamation, Pierre, South Dakota
USDA–Farm Service Agency, Clear Lake, South Dakota; Faulkton, South Dakota; Brookings, South Dakota
USDA–Farm Service Agency and NRCS, McIntosh, South Dakota; Pierre, South Dakota; Timber Lake, South Dakota; Mound City, South Dakota; Selby, South Dakota; Gettysburg, South Dakota; Onida, South Dakota; Chamberlain, South Dakota; Wessington Springs, South Dakota; Highmore, South Dakota; Ipswich, South Dakota; Leola, South Dakota; Aberdeen, South Dakota; Redfield, South Dakota; Huron, South Dakota; Miller, South Dakota;

DeSmet, South Dakota; Madison, South Dakota; Howard, South Dakota; Woonsocket, South Dakota
USDA–NRCS, Mitchell, South Dakota
USDA–APHIS, Pierre, South Dakota
National Park Service, Omaha, Nebraska
USFWS, Ecological Services, Pierre, South Dakota
USFWS, National Wildlife Refuge System, Albuquerque, New Mexico; Anchorage, Alaska; Arlington, Virginia; Atlanta, Georgia; Fort Snelling, Minnesota; Hadley, Massachusetts; Portland, Oregon; Rawlins, Wyoming; Sacramento, California; Shepherdstown, West Virginia; Washington, DC
USGS–Fort Collins Science Center, Fort Collins, Colorado

D.3 Tribal Officials

Sisseton-Wahpeton Oyate of the Lake Traverse Reservation, Agency Village, South Dakota
Cheyenne River Sioux Tribe, Eagle Butte, South Dakota
Crow Creek Sioux Tribal Council, Fort Thompson, South Dakota
Flandreau Santee Sioux Executive Committee, Flandreau, South Dakota
Fort Peck Assiniboine and Sioux Tribes Tribal Executive Board, Poplar, Montana
Lower Brule Sioux Tribal Council, Lower Brule, South Dakota
Lower Sioux Indian Community Council, Morton, Minnesota
Oglala Sioux Tribal Council, Pine Ridge, South Dakota
Prairie Island Indian Community, Welch, Minnesota
Rosebud Sioux Tribal Council, Rosebud, South Dakota
Santee Sioux Tribal Council, Niobrara, Nebraska
Spirit Lake Tribal Council, Fort Totten, North Dakota
Standing Rock Sioux Tribal Council, Fort Yates, North Dakota
Upper Sioux Community of Minnesota, Granite Falls, Minnesota

D.4 State Officials

Governor M. Michael Rounds, Pierre, South Dakota

D.5 State Agencies

South Dakota Game, Fish and Parks Department,
Pierre, South Dakota
South Dakota State University Extension Service,
Brookings, South Dakota

D.6 Local Government

County Commissioners (33)
Resource Conservation Districts (8)
Weed Board Office (19)

D.7 Organizations

American Bird Conservancy, Plains, Virginia
American Rivers, Washington, DC
Animal Protection Institute, Sacramento, California
Beyond Pesticides, Washington, DC
Defenders of Wildlife, Washington, DC
Duck Unlimited, Great Plains Office, Bismarck, North
Dakota
Fund for Animals, Silver Springs, Maryland
Izaak Walton League, Gaithersburg, Maryland
Murie Audubon Society, Casper, Wyoming
National Audubon Society, Fargo, North Dakota
National Audubon Society; Washington, DC; New
York, New York

National Trappers Association, New Martinsville,
West Virginia
National Wildlife Federation, Reston, Virginia
National Wildlife Refuge Association, Washington, DC
National Wild Turkey Federation, Bismarck, North
Dakota
Sierra Club, San Francisco, California; Sheridan,
Wyoming
The Nature Conservancy, Minneapolis, Minnesota
The U.S. Humane Society, Washington, DC
The Wilderness Society, Washington, DC
Union Pacific Railroad, Omaha, Nebraska
Wildlife Management Institute, Fort Collins, Colorado;
Corvallis, Oregon; Washington, DC

D.8 Universities, Colleges, and Schools

South Dakota State University

D.9 Media

Newspaper outlets (29)
Radio outlets (4)

D.10 Individuals

Individuals (600+)

Appendix E

Location Notices

HURON WETLAND MANAGEMENT DISTRICT LOCATION NOTICES

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
31427	Beadle	Wipf WPA	09/10/1964	Dam	Stock	1.8	—
16348	Beadle	Wipf WPA	10/07/1959	Dam	Stock	1.88	—
28661	Beadle	South Weaver WPA	11/07/1963	Dam	Stock	1.7	—
43605	Beadle	Maga-Ta-Hohpi WPA	05/06/1968	Dam	Stock	1.1	—
56366	Beadle	Maga-Ta-Hohpi WPA	06/28/1973	Dam	Stock	1.3	—
72898	Beadle	Kohnen WPA	03/20/1992	Dam	Stock	4	—
18074	Beadle	Huron WMD	06/17/1960	Dam	Stock	1	—
71278	Beadle	Huron WMD	07/18/1988	Dugout	Storage	1	—
75113	Beadle	Huron WMD	08/01/1999	Ditch plug	Wildlife	24	—
75155	Beadle	Huron WMD	09/01/1999	Ditch plug	Wildlife	4.8	—
75176	Beadle	Huron WMD	09/01/1999	Ditch plug	Wildlife	18	—
75178	Beadle	Huron WMD	09/24/1999	Ditch plug	Wildlife	2.4	—
75180	Beadle	Huron WMD	09/24/1999	Ditch plug	Wildlife	8	#1 5.6 AF #2 2.4 AF
75294	Beadle	Huron WMD	12/09/1999	Ditch plug	Wildlife	1	—
75295	Beadle	Huron WMD	12/07/1999	Ditch plug	Wildlife	8.8	—
75303	Beadle	Huron WMD	09/08/1999	Ditch plug	Wildlife	6	—
75304	Beadle	Huron WMD	09/08/1999	Ditch plug	Wildlife	17	—
72898	Beadle	Huron WMD	03/20/1992	Dam	Wildlife	4	—
719-3	Hand	Slunecka WPA	12/30/1949	Dam	Irrigation and stock	2.8	—
17096	Hand	VenJohn WPA	10/29/1959	Dam	Stock	1.2	—
2106-3	Hand	VenJohn WPA	06/30/1951	Dam	Stock	1.2	—
70978	Hand	VenJohn WPA	07/06/1987	Dam	Stock	1.2	—
12476	Hand	Boomsma WPA	03/19/1959	Dam	Stock	1.3	—
75115	Hand	Huron WMD	08/20/1999	Ditch plug	Wildlife	5.6	—
75116	Hand	Huron WMD	08/20/1999	Ditch plug	Wildlife	11.2	#1 4.2 AF #2 4.2 AF #3 2.8 AF
75119	Hand	Huron WMD	08/20/1999	Ditch plug	Wildlife	5	—
75120	Hand	Huron WMD	08/20/1999	Ditch plug	Wildlife	2	—
75296	Hand	Huron WMD	12/07/1999	Ditch plug	Wildlife	12.32	—
75567	Hand	Huron WMD	11/14/2000	Ditch plug	Wildlife	1	—
4177-3	Hyde	Harter WPA	08/25/1952	Dam	Stock	3	—
6470-3	Hyde	Cowan WPA	11/15/1954	Dam	Stock	6	—
9771	Hyde	Cowan WPA	07/26/1958	Dam	Stock	3	—
75299	Hyde	Huron WMD	12/08/1999	Ditch plug	Wildlife	4.48	—
75300	Hyde	Huron WMD	11/15/1999	Ditch plug	Wildlife	16	—

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
75568	Hyde	Huron WMD	11/14/2000	Ditch plug	Wildlife	16.64	—
75111	Jerauld	Huron WMD	08/20/1999	Ditch plug	Wildlife	3	—
75566	Jerauld	Huron WMD	11/14/2000	Ditch plug	Wildlife	4.64	—
75297	Jerauld	Huron WMD	12/09/1999	Ditch plug	Wildlife	6.75	—
75569	Jerauld	Huron WMD	11/14/2000	Ditch plug	Wildlife	15.36	—
75565	Jerauld	Huron WMD	08/09/1999	Ditch plug	Wildlife	24	—
75114	Jerauld	Huron WMD	08/09/1999	Ditch plug	Wildlife	2	—
75298	Jerauld	Huron WMD	12/09/1999	Ditch plug	Wildlife	6.47	—
72850	Sanborn	Huron WMD	12/18/1991	Ditch plug	Fish and wildlife	20.7	—
75112	Sanborn	Huron WMD	08/20/1999	Ditch plug	Wildlife	24	—
75117	Sanborn	Huron WMD	08/25/1999	Ditch plug	Wildlife	2	—
75301	Sanborn	Huron WMD	12/20/1999	Ditch plug	Wildlife	6.4	—
75302	Sanborn	Huron WMD	12/20/1999	Ditch plug	Wildlife	17.6	—
75177	Sanborn	Huron WMD	09/22/1999	Ditch plug	Wildlife	3.5	—
75182	Sanborn	Huron WMD	08/26/1999	Ditch plug	Wildlife	10.88	—
75305	Sanborn	Huron WMD	10/25/1999	Ditch plug	Wildlife	2	—
75179	Sanborn	Huron WMD	09/22/1999	Ditch plug	Wildlife	1.5	—
75181	Sanborn	Huron WMD	09/22/1999	Ditch plug	Wildlife	3.5	—
75118	Sanborn	Huron WMD	09/20/1999	Ditch plug	Wildlife	41	#1 9 AF #2 12 AF #3 12 AF #4 8 AF
72689	Sanborn	Huron WMD	03/15/1991	Ditch plug	Stock, fish and wildlife	3.5	—
72452	Sanborn	Huron WMD	10/15/1990	Ditch plug	Stock, fish and wildlife	22.3	—
72453	Sanborn	Huron WMD	10/15/1990	Ditch plug	Stock, fish and wildlife	10.1	—
72454	Sanborn	Huron WMD	10/15/1990	Ditch plug	Stock, fish and wildlife	19	—

MADISON WETLAND MANAGEMENT DISTRICT LOCATION NOTICES

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
73222	Brookings	Madison WMD	09/08/1992	Dugout	Stock	20.3	—
75148	Brookings	Madison WMD	08/24/1999	Ditch	Wildlife	4.2	—
74809	Brookings	Madison WMD	09/09/1998	Ditch	Wildlife	6.2	#1 1.8 AF #2 4.4 AF
76327	Brookings	Madison WMD	08/24/2004	Dam	Fish and wildlife	3	#1 1.5 AF #2 1.5 AF
74810	Brookings	Madison WMD	09/09/1998	Ditch	Wildlife	6.6	#1 5.6 AF #2 1.0 AF
75150	Brookings	Madison WMD	08/26/1999	Ditch	Wildlife	15.2	#1 2.6 AF #2 2.4 AF #3 3.8 AF #4 6.4 AF

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
76011	Brookings	Madison WMD	12/06/2002	Ditch plug	Wildlife	8.3	#1 0.3 AF #2 2.6 AF #3 0.8 AF #4 1.4 AF #5 2.0 AF #6 1.2 AF
76010	Brookings	Madison WMD	12/06/2002	Ditch plug	Wildlife	17.4	#1 2.6 AF #2 14.0 AF #3 0.8 AF
76009	Brookings	Madison WMD	12/06/2002	Ditch plug	Wildlife	14	#1 1.0 AF #2 0.5 AF #3 3.7 AF #4 1.1 AF #5 2.4 AF #6 1.3 AF #7 1.1 AF #8 1.0 AF #9 1.9 AF
76624	Brookings	Madison WMD	09/08/2006	Dam	Fish and wildlife	23.4	#1 9.0 AF #2 2.4 AF #3 12.0 AF
76007	Brookings	Madison WMD	12/06/2002	Ditch plug	Wildlife	15	—
76625	Brookings	Madison WMD	09/08/2006	Dam	Fish and wildlife	8.4	#1 4.8 AF #2 3.6 AF
73388	Brookings	Madison WMD	04/26/1993	Dugout	Stock	10.4	#1 4.6 AF #2 5.8 AF
75794	Brookings	Madison WMD	10/15/2001	Ditch plug	Wildlife	8	—
17-36	Brookings	Madison WMD	09/26/1955	Dugout	Stock	1.5	—
76487	Brookings	Madison WMD	10/06/2004	Dam	Fish and wildlife	2.1	—
73013	Brookings	Madison WMD	07/08/1992	Dugout	Stock	22	—
75799	Brookings	Madison WMD	08/21/2001	Ditch plug	Wildlife	21	#1 12.5 AF #2 2.5 AF #3 6.0 AF
75798	Brookings	Madison WMD	09/13/2001	Ditch plug	Wildlife	3.6	—
75803	Brookings	Madison WMD	08/21/2001	Ditch plug	Wildlife	20.1	#1 2.1 AF #2 13.6 AF #3 4.4 AF
75797	Brookings	Madison WMD	09/13/2001	Ditch plug	Wildlife	18.1	#1 7.7 AF #2 9.9 AF #3 0.5 AF
75802	Brookings	Madison WMD	08/07/2001	Ditch plug	Wildlife	18.6	#1 13 AF #2 5.6 AF
75801	Brookings	Madison WMD	08/21/2001	Ditch plug	Wildlife	4.4	#1 3.0 AF #2 1.4 AF
76008	Brookings	Madison WMD	12/06/2002	Ditch plug	Wildlife	6.6	#1 3.1 AF #2 2.7 AF #3 0.8 AF
74949	Brookings	Madison WMD	11/02/1998	Ditch	Wildlife	5.2	—
74807	Brookings	Madison WMD	08/24/1998	Ditch	Wildlife	2.3	—
72815	Brookings	Madison WMD	06/15/1991	Dugout	Stock	22.5	—
74819	Brookings	Madison WMD	08/24/1998	Ditch	Wildlife	1.5	—
74805	Brookings	Madison WMD	08/20/1998	Ditch	Wildlife	10	—

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
74782	Brookings	Madison WMD	07/18/1998	Ditch	Wildlife	8.5	#1 2.0 AF #2 1.0 AF #3 2.0 AF #4 1.0 AF #5 0.5 AF #6 0.5 AF #7 1.0 AF #8 0.5 AF
76486	Brookings	Madison WMD	04/21/2005	Ditch plug	Fish and wildlife	14.3	#1 1.5 AF #2 9.8 AF #3 3.0 AF
75064	Brookings	Madison WMD	07/02/1999	Ditch	Wildlife	10	—
74820	Brookings	Madison WMD	09/02/1998	Ditch	Wildlife	14.5	#1 3.0 AF #2 11.0 AF #3 0.5 AF
74818	Brookings	Madison WMD	08/20/1998	Ditch	Wildlife	3	#1 2.0 AF #2 1.0 AF
74806	Brookings	Madison WMD	08/20/1998	Ditch	Wildlife	3.5	#1 3.0 AF #2 0.5 AF
75061	Brookings	Madison WMD	07/02/1999	Ditch	Wildlife	11	—
75151	Brookings	Madison WMD	08/26/1999	Ditch	Wildlife	8.8	—
74947	Brookings	Madison WMD	01/20/1999	Ditch	Wildlife	10	#1 5.9 AF #2 4.1 AF
73387	Brookings	Madison WMD	04/23/1993	Dugout	Stock	2	—
15939	Brookings	Madison WMD	09/17/1955	Dugout	Stock	1.3	—
75800	Brookings	Madison WMD	08/21/2001	Ditch plug	Wildlife	20.2	#1 15.6 AF #2 0.6 AF #3 4.0 AF
75149	Brookings	Madison WMD	08/24/1999	Ditch	Wildlife	7.5	—
75141	Brookings	Madison WMD	08/24/1999	Ditch	Wildlife	9.5	#1 2.5 AF #2 2.9 AF #3 4.1 AF
76738	Brookings	Madison WMD	07/11/2007	Ditch plug	Fish and wildlife	6.8	—
75060	Brookings	Madison WMD	07/02/1999	Ditch	Wildlife	11	—
76925	Brookings	Madison WMD	08/19/2009	Dam	Fish and wildlife	5.9	—
76926	Brookings	Madison WMD	08/19/2009	Dam	Fish and wildlife	14.9	—
76929	Brookings	Madison WMD	08/19/2009	Dam	Fish and wildlife	24.8	—
74113	Brookings	Madison WMD	10/15/1994	Ditch & tile plug	Wildlife	1.2	—
72436	Brookings	Madison WMD	08/09/1990	Ditch plug	Wildlife	3.1	—
74115	Brookings	Madison WMD	05/21/1994	Tile closer	Wildlife	11	—
72605	Brookings	Madison WMD	08/05/1991	Dugout	Stock, fish and wildlife	8.3	—
74761	Brookings	Madison WMD	07/27/1998	Ditch plug	Wildlife	4	#1 3.6 AF #2 0.4 AF
74530	Brookings	Madison WMD	11/07/1996	Ditch plug	Wildlife	16	#1 8.0 AF #2 8.0 AF
74500	Brookings	Madison WMD	10/17/1996	Ditch plug	Wildlife	1	—
74462	Brookings	Madison WMD	09/09/1996	Ditch plug	Wildlife	12	—
74421	Brookings	Madison WMD	08/29/1996	Dam	Wildlife	3.2	—

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
74373	Brookings	Madison WMD	07/31/1996	Dam/ditch plug	Wildlife	3	—
74360	Brookings	Madison WMD	07/17/1996	Ditch plug	Wildlife	9.5	—
76694	Brookings	Madison WMD	08/10/2006	Dugout	Wildlife	1.8	—
76750	Brookings	Madison WMD	09/21/2007	Dam	Fish and wildlife	0.6	—
76749	Brookings	Madison WMD	09/21/2007	Dam	Fish and wildlife	1.7	—
76026	Deuel	Madison WMD	11/20/2002	Ditch plug	Wildlife	6	#1 1.4 AF #2 4.6 AF
75140	Deuel	Madison WMD	09/08/1999	Ditch	Wildlife	13.5	#1 1.8 AF #2 3.1 AF #3 2.2 AF #4 1.3 AF #5 5.1 AF
76062	Deuel	Madison WMD	11/26/2002	Ditch plug	Wildlife	11.6	—
76005	Deuel	Madison WMD	11/26/2002	Ditch plug	Wildlife	0.7	—
76027	Deuel	Madison WMD	11/20/2002	Ditch plug	Wildlife	14	#1 2.9 AF #2 7.5 AF #3 3.6 AF
76012	Deuel	Madison WMD	10/15/2002	Ditch plug	Wildlife	12	—
76020	Deuel	Madison WMD	07/12/2002	Ditch plug	Wildlife	18.9	#1 2.2 AF #2 1.0 AF #3 7.8 AF #4 1.3 AF #5 6.6 AF
75153	Deuel	Madison WMD	08/26/1999	Ditch	Wildlife	5.8	#1 3.3 AF #2 2.5 AF
75146	Deuel	Madison WMD	08/26/1999	Ditch	Wildlife	11.7	#1 1.5 AF #2 1.2 AF #3 4.1 AF #4 4.9 AF
75136	Deuel	Madison WMD	08/26/1999	Ditch	Wildlife	4	#1 1.5 AF #2 2.5 AF
75133	Deuel	Madison WMD	08/26/1999	Ditch	Wildlife	10.1	#1 2.6 AF #2 1.7 AF #3 1.5 AF #4 4.3 AF
75131	Deuel	Madison WMD	08/26/1999	Ditch	Wildlife	9.2	#1 1.2 AF #2 1.5 AF #3 5.2 AF #4 1.3 AF
75132	Deuel	Madison WMD	08/26/1999	Ditch	Wildlife	2.6	#1 1.4 AF #2 1.2 AF
75137	Deuel	Madison WMD	08/26/1999	Ditch	Wildlife	19	#1 1.6 AF #2 6.8 AF #3 3.2 AF #4 1.1 AF #5 4.2 AF #6 2.1 AF
75134	Deuel	Madison WMD	08/26/1999	Ditch	Wildlife	12.7	#1 5.4 AF #2 2.8 AF #3 1.6 AF #4 2.9 AF
75147	Deuel	Madison WMD	08/26/1999	Ditch	Wildlife	5.1	—

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
75135	Deuel	Madison WMD	08/26/1999	Ditch	Wildlife	4.8	#1 2.5 AF #2 2.3 AF
75139	Deuel	Madison WMD	08/26/1999	Ditch	Wildlife	20.6	#1 4.1 AF #2 10.5 AF #3 1.2 AF #4 4.8 AF
75820	Deuel	Madison WMD	07/24/2001	Ditch plug	Wildlife	12.1	#1 2.5 AF #2 3.2 AF #3 6.4 AF
76742	Deuel	Madison WMD	07/01/2007	Ditch plug	Fish and wildlife	9.7	#1 1.4 AF #2 0.8 AF #3 7.5 AF
75152	Deuel	Madison WMD	08/26/1999	Ditch	Wildlife	4.1	—
75154	Deuel	Madison WMD	08/26/1999	Ditch	Wildlife	21.7	#1 3.6 AF #2 6.8 AF #3 8.6 AF #4 2.7 AF
75142	Deuel	Madison WMD	08/26/1999	Ditch	Wildlife	11.8	#1 1.4 AF #2 10.4 AF
76150	Deuel	Madison WMD	06/05/2003	Ditch plug	Wildlife	8.9	—
75815	Deuel	Madison WMD	07/24/2001	Ditch plug	Wildlife	14.4	#1 10.5 AF #2 1.8 AF #3 2.1 AF
75810	Deuel	Madison WMD	10/01/2001	Ditch plug	Wildlife	12	—
75795	Deuel	Madison WMD	10/01/2001	Ditch plug	Wildlife	9	#1 3 AF #2 2 AF #3 2 AF #4 2 AF
75792	Deuel	Madison WMD	10/01/2001	Ditch plug	Wildlife	20	—
75793	Deuel	Madison WMD	10/01/2001	Ditch plug	Wildlife	5	#1 3 AF #2 2 AF
75138	Deuel	Madison WMD	08/26/1999	Ditch	Wildlife	10.4	#1 1.2 AF #2 5.9 AF #3 1.7 AF #4 1.6 AF
76149	Deuel	Madison WMD	06/03/2003	Ditch plug	Wildlife	24.8	#1 14.4 AF #2 5.6 AF #3 4.8 AF
76145	Deuel	Madison WMD	06/03/2003	Ditch plug	Wildlife	1.4	—
76144	Deuel	Madison WMD	06/05/2003	Ditch plug	Wildlife	2.5	—
76143	Deuel	Madison WMD	06/03/2003	Ditch plug	Wildlife	13.9	#1 4.7 AF #2 0.6 AF #3 8.6 AF
76739	Deuel	Madison WMD	07/10/2007	Ditch plug	Fish and wildlife	21	—
76147	Deuel	Madison WMD	06/03/2003	Ditch plug	Wildlife	9.6	#1 5.6 AF #2 4.0 AF
76148	Deuel	Madison WMD	06/03/2003	Ditch plug	Wildlife	18.5	#1 15.8 AF #2 2.7 AF
76930	Deuel	Madison WMD	08/19/2009	Dam	Fish and wildlife	24.9	—
76931	Deuel	Madison WMD	08/19/2009	Dam	Fish and wildlife	16.4	—
76932	Deuel	Madison WMD	08/19/2009	Dam	Fish and wildlife	16.7	—

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
76146	Deuel	Madison WMD	06/03/2003	Ditch plug	Wildlife	19.8	#1 8.1 AF #2 1.2 AF #3 2.4 AF #4 3.8 AF #5 1.2 AF #6 2.1 AF #7 1.0 AF
76310	Deuel	Madison WMD	10/23/2003	Ditch plug	Wildlife	23	—
76623	Deuel	Schaeffer WPA	09/08/2006	Dam	Fish and wildlife	3.9	#1 0.8 AF #2 1.7 AF #3 1.4 AF
76321	Deuel	Madison WMD	08/11/2004	Dam	Fish and wildlife	8.4	#1 3.3 AF #2 0.6 AF #3 0.8 AF #4 2.3 AF #5 0.9 AF #6 0.5 AF
76128	Deuel	Madison WMD	02/13/2003	Ditch plug	Wildlife	10	—
76741	Deuel	Madison WMD	07/10/2007	Ditch plug	Fish and wildlife	15.8	—
76740	Deuel	Madison WMD	07/10/2007	Ditch plug	Fish and wildlife	14.9	—
76928	Deuel	Madison WMD	05/26/2010	Dam	Fish and wildlife	12.1	#1 0.9 AF #2 2.0 AF #3 4.2 AF #4 1.1 AF #5 1.8 AF #6 0.3 AF #7 1.8 AF
76933	Deuel	Madison WMD	08/19/2009	Dam	Fish and wildlife	19.8	—
76934	Deuel	Madison WMD	08/19/2009	Dam	Fish and wildlife	17.7	—
76935	Deuel	Madison WMD	08/19/2009	Dam	Fish and wildlife	11.1	—
76936	Deuel	Madison WMD	08/19/2009	Dam	Fish and wildlife	23.4	—
76937	Deuel	Madison WMD	08/19/2009	Dam	Fish and wildlife	23.4	—
76938	Deuel	Madison WMD	08/19/2009	Dam	Fish and wildlife	16.9	—
76939	Deuel	Madison WMD	08/19/2009	Dam	Fish and wildlife	21.1	—
76940	Deuel	Madison WMD	08/19/2009	Dam	Fish and wildlife	13.3	—
74917	Deuel	Madison WMD	11/18/1998	Ditch plug	Wildlife	0.5	—
75355	Deuel	Madison WMD	05/15/2000	Ditch plug	Wildlife	21.9	#1 5.3 AF #2 3.0 AF #3 4.8 AF #4 2.5 AF #5 3.5 AF #6 2.8 AF
74919	Deuel	Madison WMD	11/18/1998	Ditch plug	Wildlife	13.5	—
74918	Deuel	Madison WMD	11/18/1998	Ditch plug	Wildlife	9	#1 8.0 AF #2 0.5 AF #3 0.5 AF
75353	Deuel	Madison WMD	05/12/2000	Ditch plug	Wildlife	2.2	—
75354	Deuel	Madison WMD	05/12/2000	Ditch plug	Wildlife	10.3	#1 3.5 AF #2 6.8 AF
74706	Deuel	Madison WMD	10/15/1997	Dam/ditch plug	Wildlife	11.4	#1 4.6 AF #2 6.8 AF

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
74705	Deuel	Madison WMD	10/15/1997	Dam/ditch plug	Wildlife	24.2	#1 2.2 AF #2 4.0 AF #3 5.0 AF #4 13.0 AF
74704	Deuel	Madison WMD	10/15/1997	Dam/ditch plug	Wildlife	13.8	#1 4.4 AF #2 1.2 AF #3 3.4 AF #4 4.8 AF
74703	Deuel	Madison WMD	10/15/1997	Dam/ditch plug	Wildlife	24.8	#1 14.2 AF #2 10.6 AF
74685	Deuel	Madison WMD	10/15/1997	Dam/ditch plug	Wildlife	4.4	—
74684	Deuel	Madison WMD	10/15/1997	Dam/ditch plug	Wildlife	8.8	—
74683	Deuel	Madison WMD	10/15/1997	Dam/ditch plug	Wildlife	19.2	#1 6.4 AF #2 12.8 AF
74709	Deuel	Madison WMD	10/15/1997	Dam/ditch plug	Wildlife	24.8	—
74708	Deuel	Madison WMD	10/15/1997	Dam/ditch plug	Wildlife	14.4	—
74681	Deuel	Madison WMD	10/15/1997	Dam/ditch plug	Wildlife	3	—
75496	Deuel	Madison WMD	09/19/2000	Ditch plug	Wildlife	12.8	#1 2.4 AF #2 1.6 AF #3 3.0 AF #4 5.8 AF
75495	Deuel	Madison WMD	09/19/2000	Ditch plug	Wildlife	15.6	#1 2.4 AF #2 3.2 AF #3 1.0 AF #4 0.8 AF #5 1.0 AF #6 0.8 AF #7 6.4 AF
75471	Deuel	Madison WMD	09/18/2000	Ditch plug	Wildlife	20.4	—
75466	Deuel	Madison WMD	09/13/2000	Ditch plug	Wildlife	21.6	—
75491	Deuel	Madison WMD	09/19/2000	Ditch plug	Wildlife	18.4	#1 4.2 AF #2 7.4 AF #3 1.4 AF #4 1.6 AF #5 3.8 AF
72802	Deuel	Madison WMD	10/15/1991	Ditch plug	Wildlife	11.5	#1 9.0 AF #2 2.5 AF
74501	Deuel	Madison WMD	10/16/1996	Ditch plug	Wildlife	1	—
74499	Deuel	Madison WMD	10/16/1996	Ditch plug	Wildlife	18	—
74341	Deuel	Madison WMD	06/03/1996	Dam/ditch plug	Wildlife	6	—
74682	Deuel	Madison WMD	10/15/1997	Dam/ditch plug	Wildlife	12	#1 8.4 AF #2 3.6 AF
74707	Deuel	Madison WMD	10/15/1997	Dam/ditch plug	Wildlife	23.6	#1 1.0 AF #2 1.0 AF #3 21.6 AF
74680	Deuel	Madison WMD	10/15/1997	Dam/ditch plug	Wildlife	20.6	#1 7.6 AF #2 2.4 AF #3 10.6 AF
22406	Deuel	Madison WMD	08/18/1961	Dry draw dam	Stock	1.2	—
75286	Deuel	Madison WMD	12/19/1999	Dam	Wildlife	18.3	—
75483	Deuel	Madison WMD	09/27/2000	Ditch plug	Wildlife	1.8	—
76760	Deuel	Madison WMD	09/04/2007	Dugout	Stock	1	—

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
75255	Deuel	Madison WMD	11/19/1999	Ditch plug	Wildlife	14.2	#1 3.2 AF #2 1.4 AF #3 0.9 AF #4 1.1 AF #5 2.7 AF #6 3.1 AF #7 1.8 AF
74920	Deuel	Madison WMD	11/18/1998	Ditch plug	Wildlife	3.5	#1 1.5 AF #2 2.0 AF
73567	Deuel	Madison WMD	07/15/1993	Dam/ditch plug	Wildlife	5.6	—
75513	Hamlin	Madison WMD	10/24/2000	Ditch plug	Wildlife	16.6	#1 6.1 AF #2 5.8 AF #3 4.7 AF
75512	Hamlin	Madison WMD	10/24/2000	Ditch plug	Wildlife	1	—
75514	Hamlin	Madison WMD	10/24/2000	Ditch plug	Wildlife	24.5	#1 10.5 AF #2 14.0 AF
74519	Hamlin	Madison WMD	10/31/1996	Ditch plug	Wildlife	5	#1 2.0 AF #2 3.0 AF
74518	Hamlin	Madison WMD	10/31/1996	Dam	Wildlife	10	—
73223	Hamlin	Madison WMD	09/08/1992	Dugout	Stock	12.8	—
75805	Hamlin	Madison WMD	07/24/2001	Ditch plug	Wildlife	6.3	#1 2.1 AF #2 4.2 AF
74829	Hamlin	Madison WMD	09/28/1998	Ditch	Wildlife	6.1	#1 3.8 AF #2 2.3 AF
76332	Hamlin	Madison WMD	08/25/2003	Ditch plug	Wildlife	18	—
74993	Hamlin	Madison WMD	05/05/1999	Ditch	Wildlife	1.8	—
16803	Hamlin	Madison WMD	10/16/1959	Dam	Stock	1.2	—
48932	Hamlin	Madison WMD	05/12/1970	Dry Draw	Stock	—	—
76323	Hamlin	Madison WMD	07/27/2004	Dam	Fish and wildlife	18	—
73167	Hamlin	Madison WMD	08/21/1992	Ditch plug	Wildlife	11	—
76019	Kingsbury	Madison WMD	02/21/2002	Ditch plug	Wildlife	8	—
66260	Kingsbury	Madison WMD	06/23/1978	Dry draw	Stock	1.1	—
76479	Kingsbury	Madison WMD	10/12/2004	Dam	Fish and wildlife	15.8	#1 1.5 AF #2 0.6 AF #3 1.1 AF #4 0.6 AF #5 6.8 AF #6 0.8 AF #7 2.1 AF #8 0.6 AF #9 1.7 AF
73219	Kingsbury	Madison WMD	09/09/1992	Dam/ditch	Stock	17.3	—
76478	Kingsbury	Madison WMD	10/12/2004	Dam	Fish and wildlife	9.9	#1 0.5 AF #2 1.4 AF #3 1.5 AF #4 0.8 AF #5 0.9 AF #6 1.7 AF #7 1.4 AF #8 0.8 AF #9 0.9 AF
73220	Kingsbury	Madison WMD	09/09/1992	Dam/ditch	Stock	5.5	—

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
76320	Kingsbury	Madison WMD	08/11/2004	Dam	Fish and wildlife	14.2	#1 3.3 AF #2 0.6 AF #3 1.5 AF #4 7.4 AF #5 1.4 AF
03099	Kingsbury	Madison WMD	08/02/1971	Dugout	Stock	1.3	—
76329	Kingsbury	Madison WMD	08/11/2004	Dam	Fish and wildlife	13.1	#1 3.5 AF #2 5.7 AF #3 3.0 AF
16673	Kingsbury	Madison WMD	10/28/1959	Dugout	Stock	1.5	—
76319	Kingsbury	Madison WMD	08/11/2004	Dam	Fish and wildlife	13.6	#1 1.1 AF #2 1.9 AF #3 1.5 AF #4 1.2 AF #5 2.1 AF #6 1.8 AF #7 0.8 AF #8 0.9 AF #9 2.3 AF
75816	Kingsbury	Ratfield WPA	07/24/2001	Ditch plug	Wildlife	5.5	—
76318	Kingsbury	Madison WMD	08/11/2004	Dam	Fish and wildlife	15	—
76340	Kingsbury	Madison WMD	09/15/2004	Dam	Fish and wildlife	14.4	#1 1.7 AF #2 3.2 AF #3 3.6 AF #4 2.1 AF #5 2.1 AF #6 1.0 AF
76013	Kingsbury	Madison WMD	09/09/2002	Ditch plug	Wildlife	2	—
76341	Kingsbury	Madison WMD	09/15/2004	Dam	Fish and wildlife	11.4	#1 0.6 AF #2 2.0 AF #3 1.5 AF #4 2.3 AF #5 1.2 AF #6 3.8 AF
72814	Kingsbury	Madison WMD	06/01/1991	Dugout	Stock	22.5	—
76924	Kingsbury	Madison WMD	08/19/2009	Dam	Fish and wildlife	4.4	—
74517	Kingsbury	Madison WMD	11/01/1996	Ditch plug	Wildlife	22	#1 1.0 AF #2 1.0 AF #3 1.0 AF #4 2.0 AF #5 17.0 AF
73017	Kingsbury	Madison WMD	06/22/1992	Tile riser plug	Wildlife	24	—
74114	Kingsbury	Madison WMD	10/15/1994	Ditch plug	Wildlife	1.8	—
74118	Kingsbury	Madison WMD	07/01/1994	Dam	Wildlife	0.8	—
72722	Kingsbury	Madison WMD	09/30/1991	Dam/ditch plug	Wildlife	5	—
74811	Lake	Madison WMD	09/09/1998	Ditch	Wildlife	3.4	#1 1.2 AF #2 2.2 AF
15936	Lake	Madison WMD	09/17/1959	Dry draw	Stock	1	—
12303	Lake	Madison WMD	02/11/1959	Dry draw	Stock	1	—
53381	Lake	Madison WMD	11/24/1971	Dry draw	Stock	1	—
40540	Lake	Madison WMD	07/26/1967	Dry draw	Stock	1	—

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
17459	Lake	Madison WMD	12/31/1959	Dry draw	Stock	1	—
51626	Lake	Madison WMD	06/28/1971	Dry draw	Stock	0.9	—
75808	Lake	Madison WMD	07/23/2001	Ditch plug	Wildlife	21.7	#1 4.0 AF #2 3.0 AF #3 3.2 AF #4 8.0 AF #5 3.5 AF
	Lake	Madison WMD	04/04/1972	Well	Domestic	—	—
47766	Lake	Madison WMD	10/15/1969	Dry draw	Stock	1	—
76137	Lake	Madison WMD	04/08/2003	Ditch plug	Wildlife	22	—
75809	Lake	Madison WMD	07/23/2001	Ditch plug	Wildlife	10	—
76142	Lake	Madison WMD	04/29/2003	Ditch plug	Wildlife	5	#1 3.0 AF #2 2.0 AF
76141	Lake	Madison WMD	04/29/2003	Ditch plug	Wildlife	5	—
76014	Lake	Madison WMD	07/11/2002	Ditch plug	Wildlife	2.5	—
76140	Lake	Madison WMD	04/29/2003	Ditch plug	Wildlife	10.8	#1 3.2 AF #2 7.6 AF
76006	Lake	Madison WMD	11/04/2002	Ditch plug	Wildlife	20.8	#1 6.5 AF #2 13 AF #3 1.3 AF
76138	Lake	Madison WMD	04/28/2003	Ditch plug	Wildlife	22.5	—
76025	Lake	Madison WMD	05/21/2002	Ditch plug	Wildlife	9.9	#1 1.2 AF #2 6.6 AF #3 2.1 AF
76136	Lake	Madison WMD	04/08/2003	Ditch plug	Wildlife	11	—
76135	Lake	Madison WMD	04/07/2003	Ditch plug	Wildlife	19.2	#1 3.4 AF #2 5.2 AF #3 10.6 AF
76134	Lake	Madison WMD	04/08/2003	Ditch plug	Wildlife	13	—
76133	Lake	Madison WMD	04/07/2003	Ditch plug	Wildlife	12.2	#1 9.0 AF #2 3.2 AF
76132	Lake	Madison WMD	04/07/2003	Ditch plug	Wildlife	11.2	#1 7.0 AF #2 3.3 AF #3 0.9 AF
76131	Lake	Madison WMD	04/07/2003	Ditch plug	Wildlife	17	—
76139	Lake	Madison WMD	04/29/2003	Ditch plug	Wildlife	8.6	#1 1.7 AF #2 1.5 AF #3 4.5 AF #4 0.9 AF
75812	Lake	Madison WMD	11/01/2001	Ditch plug	Wildlife	20	—
75814	Lake	Madison WMD	08/14/2001	Ditch plug	Wildlife	2.5	—
75804	Lake	Madison WMD	07/23/2001	Ditch plug	Wildlife	18.2	#1 8.5 AF #2 6.2 AF #3 3.5 AF
75811	Lake	Madison WMD	11/01/2001	Ditch plug	Wildlife	21.1	#1 10.0 AF #2 2.3 AF #3 5.2 AF #4 1.0 AF #5 1.2 AF #6 1.4 AF
75818	Lake	Madison WMD	01/29/2002	Ditch plug	Wildlife	15.5	—

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
75817	Lake	Madison WMD	01/29/2002	Ditch plug	Wildlife	11	—
75813	Lake	Madison WMD	10/24/2001	Ditch plug	Wildlife	7.6	#1 4.5 AF #2 1.3 AF #3 1.8 AF
75167	Lake	Madison WMD	09/28/1999	Ditch	Wildlife	5.2	#1 1.5 AF #2 3.7 AF
74116	Lake	Madison WMD	07/01/1994	Dam	Wildlife	6.22	#1 0.5 AF #2 10.5 AF #3 1.4 AF
74119	Lake	Madison WMD	09/25/1994	Tile riser	Wildlife	8	—
75486	Lake	Madison WMD	09/29/2000	Ditch plug	Wildlife	18.6	#1 8.1 AF #2 9.1 AF #3 1.4 AF
75515	Lake	Madison WMD	10/24/2000	Ditch plug	Wildlife	20.5	—
74735	McCook	Madison WMD	05/27/1998	Ditch plug	Wildlife	10	—
75585	McCook	Madison WMD	12/20/2000	Ditch plug	Wildlife	11.4	#1 4.2 AF #2 7.2 AF
75583	McCook	Madison WMD	12/20/2000	Ditch plug	Wildlife	20.5	
75588	McCook	Madison WMD	12/20/2000	Ditch plug	Wildlife	8.6	#1 2.9 AF #2 3.2 AF #3 2.5 AF
75821	McCook	Madison WMD	07/11/2001	Ditch plug	Wildlife	14.2	#1 1.0 AF #2 2.1 AF #3 1.0 AF #4 2.5 AF #5 4.5 AF #6 3.1 AF
74803	McCook	Madison WMD	05/27/1998	Ditch	Wildlife	10	—
938	McCook	Madison WMD	09/05/1968	Dugout	Stock	0.8	—
75819	McCook	Madison WMD	01/16/2002	Ditch plug	Wildlife	5	#1 2.6 AF #2 2.4 AF
149	McCook	Madison WMD	11/13/1956	Dugout	Stock	1	—
73218	McCook	Madison WMD	09/14/1992	Dam/Ditch	Stock	4.3	—
23645	McCook	Madison WMD	10/27/1961	Dry Draw	Stock	1.1	—
76480	Miner	Madison WMD	11/16/2004	Dam	Fish and wildlife	6.7	#1 2.1 AF #2 3.2 AF #3 1.4 AF
72813	Miner	Madison WMD	06/01/1991	Dugout	Stock	22	—
72812	Miner	Madison WMD	06/01/1991	Dugout	Stock	20.2	—
75003	Miner	Madison WMD	06/15/1999	Ditch	Wildlife	14	#1 8.5 AF #2 1.7 AF #3 3.8 AF
76485	Miner	Madison WMD	10/06/2004	Dam	Fish and wildlife	11.7	#1 4.1 AF #2 1.2 AF #3 1.7 AF #4 3.0 AF #5 1.7 AF
76484	Miner	Madison WMD	12/21/2004	Dam	Fish and wildlife	2.3	#1 1.5 AF #2 0.8 AF
75063	Miner	Madison WMD	07/13/1999	Ditch	Wildlife	3.1	#1 1.3 AF #2 1.8 AF

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
76482	Miner	Madison WMD	11/16/2004	Dam	Fish and wildlife	10.3	#1 4.8 AF #2 1.4 AF #3 0.9 AF #4 3.2 AF
75002	Miner	Madison WMD	06/15/1999	Ditch	Wildlife	14.2	#1 2.4 AF #2 2.0 AF #3 9.8 AF
76481	Miner	Madison WMD	11/16/2004	Dam	Fish and wildlife	23.1	#1 20.1 AF #2 3.0 AF
76483	Miner	Madison WMD	11/16/2004	Dam	Fish and wildlife	1.1	—
75059	Miner	Madison WMD	07/13/1999	Ditch	Wildlife	8.3	#1 1.7 AF #2 1.8 AF #3 1.7 AF #4 1.7 AF #5 0.6 AF #6 0.8 AF
76335	Miner	Hein WPA	05/03/2004	Ditch plug	Wildlife	14.5	#1 2.3 AF #2 12.2 AF
76017	Miner	Madison WMD	04/01/2002	Ditch plug	Wildlife	2.6	#1 0.8 AF #2 0.4 AF #3 1.4 AF
76016	Miner	Madison WMD	05/09/2002	Ditch plug	Wildlife	18.7	#1 1.2 AF #2 3.0 AF #3 0.6 AF #4 1.6 AF #5 12.3 AF
76324	Miner	Madison WMD	08/24/2004	Dam	Fish and wildlife	2.6	#1 2.3 AF #2 0.3 AF
76316	Miner	Madison WMD	08/02/2004	Dam	Fish and wildlife	8.5	#1 7.5 AF #2 1.0 AF
75807	Miner	Madison WMD	07/11/2001	Ditch plug	Wildlife	1.5	—
76314	Miner	Madison WMD	08/02/2004	Dam	Fish and wildlife	23.2	#1 2.6 AF #2 13.5 AF #3 1.4 AF #4 1.8 AF #5 3.9 AF
76313	Miner	Madison WMD	08/02/2004	Dam	Fish and wildlife	20.9	—
76018	Miner	Madison WMD	04/04/2002	Ditch plug	Wildlife	23.5	#1 5.2 AF #2 3.2 AF #3 2.2 AF #4 1.4 AF #5 1.4 AF #6 3.0 AF #7 3.8 AF #8 2.7 AF #9 0.6 AF
76336	Miner	Madison WMD	04/21/2004	Ditch plug	Wildlife	13.9	#1 2.7 AF #2 2.9 AF #3 8.3 AF
76311	Miner	Madison WMD	08/02/2004	Dam	Fish and wildlife	1.2	—
76334	Miner	Madison WMD	05/03/2004	Ditch plug	Wildlife	8	#1 2.3 AF #2 3.5 AF #3 1.0 AF #4 1.2 AF

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
76333	Miner	Madison WMD	04/05/2004	Ditch plug	Wildlife	9.2	#1 5.3 AF #2 3.9 AF
76326	Miner	Madison WMD	08/24/2004	Dam	Fish and wildlife	6.5	—
76325	Miner	Madison WMD	08/24/2004	Dam	Fish and wildlife	15.5	#1 8.7AF #2 6.8 AF
76322	Miner	Madison WMD	08/24/2004	Dam	Fish and wildlife	2.3	—
76317	Miner	Madison WMD	08/02/2004	Dam	Fish and wildlife	15.4	#1 3.6 AF #2 10.8 AF #3 1.0 AF
76312	Miner	Madison WMD	08/02/2004	Dam	Fish and wildlife	10.9	#1 1.0 AF #2 4.5 AF #3 1.8 AF #4 2.4 AF #5 1.2 AF
76328	Miner	Madison WMD	08/11/2004	Dam	Fish and wildlife	12	—
75144	Miner	Madison WMD	08/11/1999	Ditch	Wildlife	6.9	#1 4.1 AF #2 1.5 AF #3 1.3 AF
74804	Miner	Madison WMD	05/27/1998	Ditch	Wildlife	8	—
75062	Miner	Madison WMD	08/02/1999	Ditch	Wildlife	5.1	#1 1.2 AF #2 1.4 AF #3 1.4 AF #4 1.1 AF
76315	Miner	Madison WMD	08/02/2004	Dam	Fish and wildlife	2	—
75143	Miner	Madison WMD	08/11/1999	Ditch	Wildlife	16.5	#1 4.5 AF #2 9.8 AF #3 1.0 AF #4 1.2 AF
76015	Miner	Madison WMD	05/09/2002	Ditch plug	Wildlife	8.4	#1 0.8 AF #2 0.8 AF #3 2.0 AF #4 2.8 AF #5 0.8 AF #6 1.2 AF
75145	Miner	Madison WMD	08/11/1999	Ditch	Wildlife	8.1	#1 3.5 AF #2 4.6 AF
75065	Miner	Madison WMD	08/11/1999	Ditch	Wildlife	4.5	—
75806	Miner	Madison WMD	07/11/2001	Ditch plug	Wildlife	12.6	#1 3.5 AF #2 1.5 AF #3 1.8 AF #4 1.2 AF #5 4.6 AF
76021	Miner	Madison WMD	04/01/2002	Ditch plug	Wildlife	7	—
76024	Miner	Madison WMD	04/01/2002	Ditch plug	Wildlife	14.4	#1 2.0 AF #2 0.8 AF #3 1.0 AF #4 2.0 AF #5 3.6 AF #6 5.0 AF
76022	Miner	Madison WMD	04/01/2002	Ditch plug	Wildlife	4.8	#1 1.2 AF #2 1.7 AF #3 1.9 AF

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
76023	Miner	Madison WMD	04/01/2002	Ditch plug	Wildlife	11	#1 1.6 AF #2 3.0 AF #3 2.6 AF #4 1.0 AF #5 2.8 AF
75066	Miner	Madison WMD	08/11/1999	Ditch	Wildlife	14.7	#1 3.2 AF #2 2.2 AF #3 3.5 AF #4 1.2 AF #5 4.6 AF
76922	Miner	Madison WMD	05/26/2010	Dam	Fish and wildlife	24	—
75379	Miner	Madison WMD	06/19/2000	Ditch plug	Wildlife	15.8	#1 5.2 AF #2 2.5 AF #3 5.8 AF #4 2.3 AF
74327	Miner	Madison WMD	04/26/1996	Ditch plug	Wildlife	7	—
74326	Miner	Madison WMD	04/26/1996	Ditch plug	Wildlife	5	—
74573	Miner	Madison WMD	05/27/1997	Ditch plug	Wildlife	2	—
74180	Miner	Madison WMD	08/23/1995	Ditch plug	Wildlife	6.5	—
75582	Miner	Madison WMD	12/21/2000	Ditch plug	Wildlife	14.6	#1 1.0 AF #2 7.4 AF #3 1.4 AF #4 0.8 AF #5 1.2 AF #6 2.8 AF
75190	Miner	Madison WMD	10/13/1999	Ditch plug	Wildlife	5.9	#1 1.8 AF #2 4.1 AF
74736	Miner	Madison WMD	5/27/1998	Ditch plug	Wildlife	5	—
75228	Miner	Madison WMD	10/19/1999	Ditch plug	Wildlife	12.9	#1 1.9 AF #2 1.2 AF #3 4.2 AF #4 1.8 AF #5 2.1 AF #6 1.7 AF
75291	Miner	Madison WMD	07/29/1999	Ditch plug	Wildlife	24.4	#1 3.8 AF #2 8.5 AF #3 5.4 AF #4 6.7 AF
74181	Miner	Madison WMD	08/21/1995	Ditch plug	Wildlife	17.3	#1 10.0 AF #2 5.3 AF #3 2.0 AF
76923	Miner	Madison WMD	08/19/2009	Dam	Fish and wildlife	6.2	—
73221	Minnehaha	Madison WMD	09/14/1992	Dugout	Stock	7.5	—
75015	Minnehaha	Madison WMD	05/07/1999	Ditch	Wildlife	14.5	—
74808	Minnehaha	Madison WMD	08/28/1998	Ditch	Wildlife	4.3	#1 1.8 AF #2 1.0 AF #3 1.5 AF
72816	Minnehaha	Madison WMD	12/24/1991	Dugout	Stock	1.5	—
72817	Minnehaha	Madison WMD	12/24/1991	Dam	Fish and wildlife	20.25	—
75796	Minnehaha	Madison WMD	10/15/2001	Ditch plug	Wildlife	8	#1 4.0 AF #2 2.0 AF #3 2.0 AF

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
76505	Minnehaha	Kindt/Munce WPA	08/15/2005	Dam	Fish and wildlife	10	—
59109	Moody	Madison WMD	09/18/1974	Dry draw	Stock	2	—
76330	Moody	Madison WMD	08/08/2003	Ditch plug	Wildlife	3.8	#1 2.8 AF #2 1.0 AF
74516	Moody	Madison WMD	10/31/1996	Dam/ditch	Wildlife	9.9	—
74476	Moody	Fannie Anderson WPA	09/28/1996	Dam	Wildlife	4.5	—
774	Moody	Madison WMD	09/08/1975	Dugout	Stock	2	—
34284	Moody	Madison WMD	07/14/1965	Dry draw	Stock	1	—
57878	Moody	Madison WMD	07/19/1974	Dry draw	Stock	2	—
74477	Moody	Fannie Anderson WPA	09/22/1996	Dam	Wildlife	18.7	—
76331	Moody	Madison WMD	08/25/2003	Ditch plug	Wildlife	7.6	#1 4.2 AF #2 2.3 AF #3 0.5 AF #4 0.6 AF
73016	Moody	Madison WMD	07/07/1992	Ditch plug	Fish and wildlife	24	—
717	Moody	Madison WMD	11/12/1974	Dugout	Stock	2	—
136	Moody	Madison WMD	10/31/1958	Dugout	Stock	2.5	—
389	Moody	Madison WMD	08/29/1966	Dugout	Stock	2	—
76126	Moody	Madison WMD	04/7/2003	Ditch plug	Wildlife	22.2	#1 12.0 AF #2 1.5 AF #3 6.3 AF #4 2.4 AF
76127	Moody	Madison WMD	04/7/2003	Ditch plug	Wildlife	18.4	#1 3.5 AF #2 6.6 AF #3 2.8 AF #4 3.0 AF #5 2.5 AF
76129	Moody	Madison WMD	04/7/2003	Ditch plug	Wildlife	22.2	#1 15.7 AF #2 1.9 AF #3 4.6 AF
490	Moody	Madison WMD	6/6/1968	Dugout	Stock	2	—
76130	Moody	Madison WMD	4/7/2003	Ditch plug	Wildlife	22.2	#1 2.2 AF #2 1.8 AF #3 3.6 AF #4 3.3 AF #5 1.9 AF #6 1.9 AF #7 1.8 AF #8 2.5 AF #9 3.2 AF
74763	Moody	Madison WMD	07/27/1998	Ditch plug	Wildlife	5.6	#1 4.2 AF #2 0.4 AF #3 1.0 AF
74762	Moody	Madison WMD	07/27/1998	Ditch plug	Wildlife	16.1	#1 13 AF #2 1.5 AF #3 0.9 AF #4 0.7 AF
74468	Moody	Madison WMD	09/29/1996	Ditch plug	Wildlife	3	—
74117	Moody	Madison WMD	07/01/1994	Dam	Wildlife	1.8	#1 1.2 AF #2 0.6 AF
76743	Moody	Madison WMD	10/18/2006	Dam	Wildlife	3.4	—

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
74475	Moody	Madison WMD	09/21/1996	Ditch plug	Wildlife	20	#1 0.25 AF #2 0.50 AF #3 0.25 AF #4 1.5 AF #5 0.25 AF #6 16 AF #7 0.25 AF #8 0.25 AF #9 0.75 AF

SAND LAKE WETLAND MANAGEMENT DISTRICT LOCATION NOTICES

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
5922-3	Brown	Sand Lake WMD	07/15/1954	Dugout	Stock	1.1	—
69151	Brown	Sand Lake WMD	11/06/1981	Dugout	Stock	1.3	—
3065	Brown	Sand Lake WMD	06/06/1956	Dugout	Stock	1.16	—
312-1664	Brown	Sand Lake WMD	07/22/1974	Dugout	Stock	0.8	—
15559	Brown	Sand Lake WMD	09/01/1959	Dugout	Stock	1.5	—
52813	Brown	Sand Lake WMD	10/08/1971	Dugout	Stock	1.1	—
36845	Brown	Sand Lake WMD	06/27/1966	Dam	Stock	1.5	—
47469	Brown	Sand Lake WMD	09/02/1969	Dugout	Stock	1.1	—
74285	Brown	Sand Lake WMD	04/20/1995	Dam	Wildlife	8	—
73088	Brown	Sand Lake WMD	08/04/1992	Dugout	Stock and wildlife	1	—
73089	Brown	Sand Lake WMD	08/04/1992	Dugout	Wildlife	1	—
73180	Brown	Sand Lake WMD	08/4/1992	Dugout	Stock and wildlife	1	—
73185	Brown	Sand Lake WMD	08/04/1992	Dugout	Wildlife	1	—
76-456	Edmunds	Sand Lake WMD	12/06/1976	Dugout	Stock	1.8	—
74-397	Edmunds	Sand Lake WMD	09/11/1974	Dugout	Stock	1.25	—
67-485	Edmunds	Sand Lake WMD	11/10/1967	Dugout	Stock	0.9	—
70-443	Edmunds	Sand Lake WMD	09/02/1970	Dugout	Stock	1.25	—
80-430	Edmunds	Sand Lake WMD	09/24/1980	Dugout	Stock	1.4	—
42628	Edmunds	Sand Lake WMD	10/23/1957	Dugout	Stock	0.8	—
25250	Edmunds	Sand Lake WMD	09/10/1962	Dugout	Stock	1.8	—
39764	Edmunds	Sand Lake WMD	07/27/1956	Dugout	Stock	1.2	—
45199	Edmunds	Sand Lake WMD	10/13/1958	Dugout	Stock	1.2	—
42683	Edmunds	Sand Lake WMD	10/31/1957	Dugout	Stock	0.6	—
39806	Edmunds	Sand Lake WMD	08/08/1956	Dugout	Stock	1.2	—
28713	Edmunds	Sand Lake WMD	11/19/1951	Dam	Stock	0.3	—
59146	Edmunds	Sand Lake WMD	08/22/1966	Dugout	Stock	1.5	—
71-183	Edmunds	Sand Lake WMD	04/21/1971	Dugout	Stock	1.3	—
67-458	Edmunds	Sand Lake WMD	11/06/1967	Dugout	Stock	1.2	—
52455	Edmunds	Sand Lake WMD	07/16/1962	Dugout	Stock	1.53	—
55520	Edmunds	Sand Lake WMD	09/14/1964	Dugout	Stock	1.5	—
34113	Edmunds	Sand Lake WMD	03/27/1954	Dugout	Stock	1.7	—
70-442	Edmunds	Sand Lake WMD	09/02/1970	Dugout	Stock	1.25	—

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
41819	Edmunds	Sand Lake WMD	07/31/1957	Dugout	Stock	1.5	—
71-723	Edmunds	Sand Lake WMD	12/21/1971	Dugout	Stock	1.2	—
29726	Edmunds	Sand Lake WMD	08/29/1952	Dam	Stock	1.9	—
75-429	Edmunds	Sand Lake WMD	10/27/1975	Dugout	Stock	1.25	—
80-376	Edmunds	Sand Lake WMD	09/02/1980	Dugout	Stock	1.8	—
59207	Edmunds	Sand Lake WMD	09/13/1966	Dugout	Stock	1.4	—
28009	Edmunds	Sand Lake WMD	10/22/1951	Dugout	Stock	1.9	—
56721	Edmunds	Sand Lake WMD	07/02/1965	Dugout	Stock	1.5	—
73-551	Edmunds	Sand Lake WMD	11/08/1973	Dugout	Stock	1.3	—
56954	Edmunds	Sand Lake WMD	09/07/1965	Dugout	Stock	1.8	—
74-189	Edmunds	Sand Lake WMD	05/06/1974	Dugout	Stock	1.25	—
69-471	Edmunds	Sand Lake WMD	10/03/1969	Dugout	Stock	1.3	—
40424	Edmunds	Sand Lake WMD	11/20/1956	Dugout	Stock	1.2	—
74384	Edmunds	Sand Lake WMD	08/05/1996	Dam	Wildlife	10	—
74383	Edmunds	Sand Lake WMD	08/05/1996	Dam	Wildlife	10	—
73401	Edmunds	Sand Lake WMD	09/23/1992	Dugout	Stock and wildlife	0.15	—
73400	Edmunds	Sand Lake WMD	09/23/1992	Dugout	Stock	0.9	—
B-2345	Faulk	Sand Lake WMD	07/08/1958	Dugout	Stock	0.6	—
73492	McPherson	Sand Lake WMD	06/01/1993	Dam	Wildlife	15	—
73491	McPherson	Sand Lake WMD	06/02/1993	Dam	Wildlife	13.5	—
70272	McPherson	Sand Lake WMD	09/10/1984	Dry draw dam	Storage	1	—
70063	McPherson	Sand Lake WMD	11/02/1983	Dry draw dam	Storage	1.1	—
69995	McPherson	Sand Lake WMD	09/29/1983	Dry draw dam	Storage	1	—
112	McPherson	Sand Lake WMD	08/09/1967	Dugout	Stock	1.1	—
105266	McPherson	Sand Lake WMD	12/16/1959	Dugout	Stock	1.2	—
107665	McPherson	Sand Lake WMD	11/27/1961	Dugout	Stock	1.3	—
285	McPherson	Sand Lake WMD	10/09/1967	Dugout	Stock	1.2	—
2566	McPherson	Sand Lake WMD	12/30/1971	Dugout	Stock	1.1	—
112333	McPherson	Sand Lake WMD	12/28/1965	Dugout	Stock	1.5	—
105959	McPherson	Sand Lake WMD	08/11/1960	Dugout	Stock	1.8	—
1079	McPherson	Sand Lake WMD	09/17/1968	Dugout	Stock	1.5	—
109311	McPherson	Sand Lake WMD	05/21/1963	Dugout	Stock	1.3	—
4801	McPherson	Sand Lake WMD	07/27/1977	Dam	Stock	1.1	—
4392	McPherson	Sand Lake WMD	06/04/1976	Dam	Stock	1.1	—
4857	McPherson	Sand Lake WMD	09/12/1977	Dugout	Stock	1.1	—
105978	McPherson	Sand Lake WMD	08/19/1960	Dugout	Stock	1.2	—
110951	McPherson	Sand Lake WMD	11/02/1964	Dugout	Stock	1.8	—
104681	McPherson	Sand Lake WMD	07/08/1959	Dugout	Stock	1.2	—
1608	McPherson	Sand Lake WMD	10/31/1969	Dugout	Stock	1.0	—
63792	McPherson	Sand Lake WMD	08/05/1976	Dam	Stock	1.0	—
101611	McPherson	Sand Lake WMD	09/22/1957	Dugout	Stock	1.5	—
9889	McPherson	Sand Lake WMD	09/03/1958	Dugout	Stock	1.2	—
8294	McPherson	Sand Lake WMD	01/17/1986	Dugout	Stock	0.75	—
104699	McPherson	Sand Lake WMD	07/16/1959	Dugout	Stock	1.2	—

<i>Location notice no.</i>	<i>County</i>	<i>Area</i>	<i>Priority date</i>	<i>Structure type</i>	<i>Use</i>	<i>Storage acre-feet</i>	<i>Additional information</i>
6010	McPherson	Sand Lake WMD	06/02/1980	Dugout	Stock	0.9	—
3485	McPherson	Sand Lake WMD	10/05/1973	Dugout	Stock	0.9	—
101701	McPherson	Sand Lake WMD	10/14/1957	Dugout	Stock	1.25	—
108781	McPherson	Sand Lake WMD	12/05/1962	Dugout	Stock	1.28	—
101161	McPherson	Sand Lake WMD	07/08/1957	Dugout	Stock	1.25	—
106716	Potter	Sand Lake WMD	06/24/1976	Dugout	Stock	1.8	—
1669	Spink	Sand Lake WMD	12/15/1972	Dugout	Stock	1.1	—
57003	Spink	Sand Lake WMD	09/14/1981	Dugout	Stock	2.9	—
54068	Spink	Sand Lake WMD	07/22/1966	Dugout	Stock	1.5	—
56726	Spink	Sand Lake WMD	07/06/1976	Dam	Stock	1.5	—

Appendix F

South Dakota Upland Plant Associations

- Updated July 27, 2009.
- Record 1 of below types.
- Based on Daubenmire dominant canopy cover.
- These categories are designed for monitoring plant community composition of native sod, planted natives, and DNC.
- Revised from Grant et al. 2004, Hegstad 1973.
- Document robust patches of native forbs >50% with category 25 (i.e., lead plant, goldenrod, etc.). Alternatively, category 75 (other weeds) can be used to document weed patches that typically dominate disturbed sites.
- Litter is not a category in itself, therefore assign litter to category it applies to (e.g., Kentucky bluegrass litter = 31).
- In the event of an apparent equal mix of Kentucky bluegrass and smooth brome—consider as code 41.
- Prairie rose and leadplant are considered native forbs with respect to these categories.

F.1 Shrub And Tree Types

LOW SHRUB

(generally 1.5–4.5 feet tall, e.g., western snowberry)

- 11 dense low shrub, other plants few or none
- 12 low shrub, remainder native grass and forb
- 13 low shrub, remainder Kentucky bluegrass
- 14 low shrub, remainder brome or quackgrass
- 19 low shrub, remainder crested

TALL SHRUB

(generally 4.5–15 feet tall)

- 15 tall shrub, native
- 16 tall shrub, exotic

TREES

- 17 native trees (e.g. cottonwood, green ash, bur oak)
- 18 nonnative trees (e.g. Japanese elm, Russian olive)

F.2 Native Grass-Forb Types^a

- 21 cool-season grasses and forbs: (A) green needle, (B) western wheatgrass, (C) porcupine grass

- 22 warm-season grasses and forbs: (A) big bluestem, (B) switch, (C) Indian, (D) little bluestem
- 23 meadow (sedges, baltic rush, dock, smartweed, cordgrass, reedgrass, horsetail, foxtail barley, etc.)
- 24 wetland; robust emergent vegetation or open water (cattail, river bulrush, bur-reed, *Phragmites*, manna grass)
- 25 forb

F.3 Introduced, Invasive, or Plants of Management Concern

- 31 Kentucky bluegrass dominant
- 41 smooth brome dominant
- 51 crested wheatgrass dominant
- 52 quackgrass
- 53 reed canarygrass
- 61 tall, intermediate, or pubescent wheatgrass
- 62 other nonnative grass—user defined (downy/Japanese brome, etc.)

F.4 Noxious and Other Weed Types

- 71 leafy spurge
- 72 Canada thistle
- 73 sow thistle
- 74 wormwoods
- 75 other weeds (kochia, ragweed, cocklebur, etc.)
- 76 other noxious weed (user-defined)

F.5 Other

- 81 tall introduced legume (sweet clover or alfalfa)
- 83 cactus
- 84 clubmoss/lichen
- 91 barren, unvegetated (bare soil, gopher mound)
- 92 other (rock, manure, hole, ant hill)

^a *Optional Species Modifier: Document dominant native grass species using the respective letter*

Appendix G

South Dakota Species

BIRDS¹

<i>Common name</i>	<i>Scientific name</i>
Loons	
Common Loon	<i>Gavia immer</i>
Grebes	
Pied-billed Grebe	<i>Podilymbus podiceps</i>
Horned Grebe ²	<i>Podiceps auritus</i>
Red-necked Grebe	<i>Podiceps grisegena</i>
Eared Grebe	<i>Podiceps nigricollis</i>
Western Grebe	<i>Aechmophorus occidentalis</i>
Pelicans	
American White Pelican	<i>Pelecanus erythrorhynchos</i>
Cormorants	
Double-crested Cormorant	<i>Phalacrocorax auritus</i>
Hérons and Bitterns	
American Bittern ²	<i>Botaurus lentiginosus</i>
Least Bittern ²	<i>Ixobrychus exilis</i>
Great Blue Heron	<i>Ardea herodias</i>
Great Egret	<i>Ardea alba</i>
Snowy Egret	<i>Egretta thula</i>
Cattle Egret	<i>Bubulcus ibis</i>
Green Heron	<i>Butorides virescens</i>
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>
Ibises	
White-faced Ibis	<i>Plegadis chihi</i>
Vultures	
Turkey Vulture	<i>Cathartes aura</i>
Swans, Geese, and Ducks	
Greater White-fronted Goose	<i>Anser albifrons</i>
Snow Goose	<i>Chen caerulescens</i>
Ross' Goose	<i>Chen rossii</i>
Canada Goose	<i>Branta canadensis</i>
Tundra Swan	<i>Cygnus columbianus</i>
Wood Duck	<i>Aix sponsa</i>
Gadwall	<i>Anas strepera</i>
American Wigeon	<i>Anas americana</i>
Mallard	<i>Anas platyrhynchos</i>
Blue-winged Teal	<i>Anas discors</i>
Northern Shoveler	<i>Anas clypeata</i>
Northern Pintail	<i>Anas acuta</i>

<i>Common name</i>	<i>Scientific name</i>
Green-winged Teal	<i>Anas crecca</i>
Canvasback	<i>Aythya valisineria</i>
Redhead	<i>Aythya americana</i>
Ring-necked Duck	<i>Aythya collaris</i>
Greater Scaup	<i>Aythya marila</i>
Lesser Scaup	<i>Aythya affinis</i>
Bufflehead	<i>Bucephala albeola</i>
Common Goldeneye	<i>Bucephala clangula</i>
Hooded Merganser	<i>Lophodytes cucullatus</i>
Common Merganser	<i>Mergus merganser</i>
Red-breasted Merganser	<i>Mergus serrator</i>
Ruddy Duck	<i>Oxyura jamaicensis</i>
Kites, Eagles, and Hawks	
Osprey	<i>Pandion haliaetus</i>
Bald Eagle ²	<i>Haliaeetus leucocephalus</i>
Northern Harrier	<i>Circus cyaneus</i>
Sharp-shinned Hawk	<i>Accipiter striatus</i>
Cooper's Hawk	<i>Accipiter cooperii</i>
Northern Goshawk	<i>Accipiter gentilis</i>
Broad-winged Hawk	<i>Buteo platypterus</i>
Swainson's Hawk ²	<i>Buteo swainsoni</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Ferruginous Hawk	<i>Buteo regalis</i>
Rough-legged Hawk	<i>Buteo lagopus</i>
Golden Eagle	<i>Aquila chrysaetos</i>
Falcons	
American Kestrel	<i>Falco sparverius</i>
Merlin	<i>Falco columbarius</i>
Peregrine Falcon ²	<i>Falco peregrinus</i>
Prairie Falcon	<i>Falco mexicanus</i>
Partridge, Pheasant, Grouse, Turkey, and Quail	
Gray Partridge (Introduced)	<i>Perdix perdix</i>
Ring-necked Pheasant (Introduced)	<i>Phasianus colchicus</i>
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>
Greater Prairie-Chicken	<i>Tympanuchus cupido</i>
Wild Turkey	<i>Meleagris gallopavo</i>
Rails, Gallinules, and Coots	
Virginia Rail	<i>Rallus limicola</i>
Sora	<i>Porzana carolina</i>
American Coot	<i>Fulica americana</i>
Cranes	
Sandhill Crane	<i>Grus canadensis</i>
Whooping Crane	<i>Grus americana</i>
Plovers	
Black-bellied Plover	<i>Pluvialis squatarola</i>
American Golden-Plover	<i>Pluvialis dominica</i>

<i>Common name</i>	<i>Scientific name</i>
Semipalmated Plover	<i>Charadrius semipalmatus</i>
Piping Plover	<i>Charadrius melodus</i>
Killdeer	<i>Charadrius vociferus</i>
Stilts and Avocets	
American Avocet	<i>Recurvirostra americana</i>
Sandpipers and Phalaropes	
Greater Yellowlegs	<i>Tringa melanoleuca</i>
Lesser Yellowlegs	<i>Tringa flavipes</i>
Solitary Sandpiper	<i>Tringa solitaria</i>
Willet	<i>Catoptrophorus semipalmatus</i>
Spotted Sandpiper	<i>Actitis macularia</i>
Upland Sandpiper ²	<i>Bartramia longicauda</i>
Long-billed Curlew ²	<i>Numenius americanus</i>
Hudsonian Godwit	<i>Limosa haemastica</i>
Marbled Godwit ²	<i>Limosa fedoa</i>
Ruddy Turnstone	<i>Arenaria interpres</i>
Sanderling	<i>Calidris alba</i>
Semipalmated Sandpiper	<i>Calidris pusilla</i>
Least Sandpiper	<i>Calidris minutilla</i>
White-rumped Sandpiper	<i>Calidris fuscicollis</i>
Baird's Sandpiper	<i>Calidris bairdii</i>
Pectoral Sandpiper	<i>Calidris melanotos</i>
Dunlin	<i>Calidris alpina</i>
Stilt Sandpiper	<i>Calidris himantopus</i>
Short-billed Dowitcher	<i>Limnodromus griseus</i>
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>
Wilson's Snipe	<i>Gallinago delicata</i>
American Woodcock	<i>Scolopax minor</i>
Wilson's Phalarope	<i>Phalaropus tricolor</i>
Red-necked Phalarope	<i>Phalaropus lobatus</i>
Jaegers, Gulls, and Terns	
Franklin's Gull	<i>Larus pipixcan</i>
Bonaparte's Gull	<i>Larus philadelphia</i>
Ring-billed Gull	<i>Larus delawarensis</i>
Herring Gull	<i>Larus argentatus</i>
Common Tern	<i>Sterna hirundo</i>
Forster's Tern	<i>Sterna forsteri</i>
Least Tern	<i>Sterna antillarum</i>
Black Tern ²	<i>Chlidonias niger</i>
Pigeons and Doves	
Rock Pigeon (Introduced)	<i>Columba livia</i>
Eurasian Collared-dove (Introduced)	<i>Streptopelia decaocto</i>
Mourning Dove	<i>Zenaida macroura</i>
Cuckoos and Anis	
Black-billed Cuckoo ²	<i>Coccyzus erythrophthalmus</i>
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>

<i>Common name</i>	<i>Scientific name</i>
Typical Owls	
Eastern Screech-Owl	<i>Otus asio</i>
Great Horned Owl	<i>Bubo virginianus</i>
Snowy Owl	<i>Nyctea scandiaca</i>
Burrowing Owl	<i>Athene cunicularia</i>
Long-eared Owl	<i>Asio otus</i>
Short-eared Owl ²	<i>Asio flammeus</i>
Goatsuckers	
Common Nighthawk	<i>Chordeiles minor</i>
Whip-poor-will	<i>Caprimulgus vociferus</i>
Swifts	
Chimney Swift	<i>Chaetura pelagica</i>
Hummingbirds	
Ruby-throated Hummingbird	<i>Archilochus colubris</i>
Kingfishers	
Belted Kingfisher	<i>Ceryle alcyon</i>
Woodpeckers	
Red-headed Woodpecker ²	<i>Melanerpes erythrocephalus</i>
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Hairy Woodpecker	<i>Picoides villosus</i>
Northern Flicker	<i>Colaptes auratus</i>
Tyrant Flycatchers	
Eastern Wood-Pewee	<i>Contopus virens</i>
Alder Flycatcher	<i>Empidonax alnorum</i>
Willow Flycatcher	<i>Empidonax traillii</i>
Least Flycatcher	<i>Empidonax minimus</i>
Eastern Phoebe	<i>Sayornis phoebe</i>
Great Crested Flycatcher	<i>Myiarchus crinitus</i>
Western Kingbird	<i>Tyrannus verticalis</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>
Shrikes	
Loggerhead Shrike	<i>Lanius ludovicianus</i>
Northern Shrike	<i>Lanius excubitor</i>
Vireos	
Yellow-throated Vireo	<i>Vireo flavifrons</i>
Blue-headed Vireo	<i>Vireo solitarius</i>
Warbling Vireo	<i>Vireo gilvus</i>
Red-eyed Vireo	<i>Vireo olivaceus</i>
Jays, Magpies, and Crows	
Blue Jay	<i>Cyanocitta cristata</i>
Black-billed Magpie	<i>Pica hudsonia</i>
American Crow	<i>Corvus brachyrhynchos</i>
Larks	
Horned Lark	<i>Eremophila alpestris</i>

<i>Common name</i>	<i>Scientific name</i>
Swallows	
Purple Martin	<i>Progne subis</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
Bank Swallow	<i>Riparia riparia</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>
Barn Swallow	<i>Hirundo rustica</i>
Titmice	
Black-capped Chickadee	<i>Poecile atricapilla</i>
Nuthatches	
Red-breasted Nuthatch	<i>Sitta canadensis</i>
White-breasted Nuthatch	<i>Sitta carolinensis</i>
Creepers	
Brown Creeper	<i>Certhia americana</i>
Wrens	
House Wren	<i>Troglodytes aedon</i>
Sedge Wren	<i>Cistothorus platensis</i>
Marsh Wren	<i>Cistothorus palustris</i>
Kinglets	
Golden-crowned Kinglet	<i>Regulus satrapa</i>
Ruby-crowned Kinglet	<i>Regulus calendula</i>
Thrushes	
Eastern Bluebird	<i>Sialia sialis</i>
Gray-cheeked Thrush	<i>Catharus minimus</i>
Swainson's Thrush	<i>Catharus ustulatus</i>
Hermit Thrush	<i>Catharus guttatus</i>
Wood Thrush	<i>Hylocichla mustelina</i>
American Robin	<i>Turdus migratorius</i>
Mockingbirds and Thrashers	
Gray Catbird	<i>Dumetella carolinensis</i>
Brown Thrasher	<i>Toxostoma rufum</i>
Starlings	
European Starling (Introduced)	<i>Sturnus vulgaris</i>
Pipits	
American Pipit	<i>Anthus rubescens</i>
Sprague's Pipit ²	<i>Anthus spragueii</i>
Waxwings	
Bohemian Waxwing	<i>Bombycilla garrulus</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>

<i>Common name</i>	<i>Scientific name</i>
Wood-Warblers	
Tennessee Warbler	<i>Vermivora peregrina</i>
Orange-crowned Warbler	<i>Vermivora celata</i>
Nashville Warbler	<i>Vermivora ruficapilla</i>
Yellow Warbler	<i>Dendroica petechia</i>
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>
Magnolia Warbler	<i>Dendroica magnolia</i>
Yellow-rumped Warbler	<i>Dendroica coronata</i>
Black-throated Green Warbler	<i>Dendroica virens</i>
Blackburnian Warbler	<i>Dendroica fusca</i>
Palm Warbler	<i>Dendroica palmarum</i>
Bay-breasted Warbler	<i>Dendroica castanea</i>
Blackpoll Warbler	<i>Dendroica striata</i>
Black-and-white Warbler	<i>Mniotilta varia</i>
American Redstart	<i>Setophaga ruticilla</i>
Ovenbird	<i>Seiurus aurocapillus</i>
Northern Waterthrush	<i>Seiurus noveboracensis</i>
Mourning Warbler	<i>Oporornis philadelphia</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
Wilson's Warbler	<i>Wilsonia pusilla</i>
Canada Warbler	<i>Wilsonia canadensis</i>
Tanagers	
Scarlet Tanager	<i>Piranga olivacea</i>
Towhees, Sparrows, Juncos, and Longspurs	
Spotted Towhee	<i>Pipilo maculatus</i>
Eastern Towhee	<i>Pipilo erythrophthalmus</i>
American Tree Sparrow	<i>Spizella arborea</i>
Chipping Sparrow	<i>Spizella passerina</i>
Clay-colored Sparrow	<i>Spizella pallida</i>
Field Sparrow	<i>Spizella pusilla</i>
Vesper Sparrow	<i>Pooecetes gramineus</i>
Lark Sparrow	<i>Chondestes grammacus</i>
Lark Bunting	<i>Calamospiza melanocorys</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Grasshopper Sparrow ²	<i>Ammodramus savannarum</i>
Baird's Sparrow ²	<i>Ammodramus bairdii</i>
Le Conte's Sparrow	<i>Ammodramus leconteii</i>
Fox Sparrow	<i>Passerelia iliaca</i>
Song Sparrow	<i>Melospiza melodia</i>
Lincoln's Sparrow	<i>Melospiza lincolni</i>
Swamp Sparrow	<i>Melospiza georgiana</i>
White-throated Sparrow	<i>Zonotrichia albicollis</i>
Harris' Sparrow	<i>Zonotrichia querula</i>
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>
Dark-eyed Junco	<i>Junco hyemalis</i>
Lapland Longspur	<i>Calcarius lapponicus</i>

<i>Common name</i>	<i>Scientific name</i>
Chestnut-collared Longspur ²	<i>Calcarius ornatus</i>
Snow Bunting	<i>Plectrophenax nivalis</i>
Cardinals, Grosbeaks, and Buntings	
Northern Cardinal	<i>Cardinalis cardinalis</i>
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>
Indigo Bunting	<i>Passerina cyanea</i>
Dickeissel ²	<i>Spiza americana</i>
Meadowlarks, Blackbirds, and Orioles	
Bobolink	<i>Dolichonyx oryzivorus</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Western Meadowlark	<i>Sturnella neglecta</i>
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>
Rusty Blackbird	<i>Euphagus carolinus</i>
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>
Common Grackle	<i>Quiscalus quiscula</i>
Brown-headed Cowbird	<i>Molothrus ater</i>
Orchard Oriole	<i>Icterus spurius</i>
Baltimore Oriole	<i>Icterus galbula</i>
Finches	
Purple Finch	<i>Carpodacus purpureus</i>
House Finch	<i>Carpodacus mexicanus</i>
Red Crossbill	<i>Loxia curvirostra</i>
White-winged Crossbill	<i>Loxia leucoptera</i>
Common Redpoll	<i>Carduelis flammea</i>
Pine Siskin	<i>Carduelis pinus</i>
American Goldfinch	<i>Carduelis tristis</i>
Evening Grosbeak	<i>Coccothraustes vespertinus</i>
Old World Sparrows	
House Sparrow (Introduced)	<i>Passer domesticus</i>

¹ This list based on “The Birds of South Dakota” (Tallman et al. 2002) and “Checklist of North American Birds” (AOU 1998) and limited to species classified as Common (>25 individuals a day could be seen by a single observer in appropriate habitat) and Uncommon (<25 individuals a day could be seen by a single observer in appropriate habitat). Species classified as Rare (average fewer than 6 observations state or region-wide per season), Casual (out of normal range [3–10 records statewide in past 10 years]), or Accidental (far from normal range [0–2 records statewide in past 10 years]) are not listed.

² Birds of Conservation Concern (breeding) in the Prairie Potholes Bird Conservation Region (USFWS 2008a).

MAMMALS¹

<i>Common name</i>	<i>Scientific name</i>
Opossums	
Virginia Opossum	<i>Didelphis virginiana</i>
Insectivores	
Shrews	
Cinereus or Masked Shrew	<i>Sorex cinereus</i>
Northern Short-tailed Shrew	<i>Blarina brevicauda</i>
Arctic Shrew	<i>Sorex arcticus</i>
Hayden's Shrew	<i>Sorex haydeni</i>
Dwarf Shrew	<i>Sorex nanus</i>
Pygmy Shrew	<i>Sorex hoyi</i>
Moles	
Eastern Mole	<i>Scalopus aquaticus</i>
Bats	
Vespertilionid Bats	
Little Brown Myotis	<i>Myotis lucifugus</i>
Northern Myotis	<i>Myotis septentrionalis</i>
Eastern Red Bat	<i>Lasiurus borealis</i>
Hoary Bat	<i>Lasiurus cinereus</i>
Silver-haired Bat	<i>Lasionycteris noctivagans</i>
Big Brown Bat	<i>Eptesicus fuscus</i>
Lagomorphs	
Hares and Rabbits	
Eastern Cottontail	<i>Sylvilagus floridanus</i>
White-tailed Jackrabbit	<i>Lepus townsendii</i>
Rodents	
Squirrels	
Woodchuck	<i>Marmota monax</i>
Franklin's Ground Squirrel	<i>Spermophilus franklinii</i>
Richardson's Ground Squirrel	<i>Spermophilus richardsonii</i>
Thirteen-lined Ground Squirrel	<i>Spermophilus tridecemlineatus</i>
Black-Tailed Prairie Dog	<i>Cynomys ludovicianus</i>
Eastern Gray Squirrel	<i>Sciurus carolinensis</i>
Eastern Fox Squirrel	<i>Sciurus niger</i>
Pocket Gophers	
Northern Pocket Gopher	<i>Thomomys talpoides</i>
Plains Pocket Gopher	<i>Geomys bursarius</i>
Heteromyids	
Plains Pocket Mouse	<i>Perognathus flavescens</i>
Olive-Backed Pocket Mouse	<i>Perognathus fasciatus</i>
Hispid Pocket Mouse	<i>Chaetodipus hispidus</i>
Beavers	
American Beaver	<i>Castor canadensis</i>
Mice, Rats, and Voles	
Western Harvest Mouse	<i>Reithrodontomys megalotis</i>
White-footed Mouse	<i>Peromyscus leucopus</i>

<i>Common name</i>	<i>Scientific name</i>
Deer Mouse	<i>Peromyscus maniculatus</i>
Northern Grasshopper Mouse	<i>Onychomys leucogaster</i>
Norway Rat	<i>Rattus norvegicus</i>
House Mouse	<i>Mus musculus</i>
Southern Red-backed Vole	<i>Clethrionomys gapperi</i>
Prairie Vole	<i>Microtus ochrogaster</i>
Meadow Vole	<i>Microtus pennsylvanicus</i>
Common Muskrat	<i>Ondatra zibethicus</i>
Jumping Mice	
Meadow Jumping Mouse	<i>Zapus hudsonius</i>
New World Porcupines	
Common Porcupine	<i>Erethizon dorsatum</i>
Carnivores	
Canids	
Coyote	<i>Canis latrans</i>
Red Fox	<i>Vulpes vulpes</i>
Common Gray Fox	<i>Urocyon cinereoargenteus</i>
Procyonids	
Common Raccoon	<i>Procyon lotor</i>
Mustelids	
Ermine	<i>Mustela erminea</i>
Long-tailed Weasel	<i>Mustela frenata</i>
Least Weasel	<i>Mustela nivalis</i>
American Mink	<i>Mustela vison</i>
American Badger	<i>Taxidea taxus</i>
Mephitids	
Eastern Spotted Skunk	<i>Spilogale putorius</i>
Striped Skunk	<i>Mephitis mephitis</i>
Cats	
Bobcat	<i>Felis rufus</i>
Ungulates	
Cervids	
Mule or Black-tailed Deer	<i>Odocoileus hemionus</i>
White-tailed Deer	<i>Odocoileus virginianus</i>
Antelope Caprids	
Pronghorn	<i>Antilocapra americana</i>
Bovids	
Domestic cattle	<i>Bos taurus</i>

¹ This list is based on the reference "Wild Mammals of South Dakota" (Higgins et al. 2000) along with staff observations

AMPHIBIANS AND REPTILES¹

<i>Common name</i>	<i>Scientific name</i>
Salamanders	
Tiger Salamander	<i>Ambystoma tigrinum</i>
Frogs and Toads	
Plains Spadefoot	<i>Spea bombifrons</i>
Boreal Chorus Frog	<i>Pseudacris maculata</i>
Northern Leopard Frog	<i>Rana pipiens</i>
Woodhouse's Toad	<i>Bufo woodhousei</i>
American Toad	<i>Bufo americanus</i>
Canadian Toad	<i>Bufo hemiophrys</i>
Great Plains Toad	<i>Bufo cognatus</i>
Turtles	
Western Painted Turtle	<i>Chrysemys picta bellii</i>
Snapping Turtle	<i>Chelydra serpentina</i>
Spiny Soft Shelled Turtle	<i>Trionyx spiniferus</i>
Skinks	
Prairie Skink	<i>Eumeces septentrionalis</i>
Snakes	
Racer	<i>Coluber constrictor</i>
Gophersnake	<i>Pituophis catenifer</i>
Eastern Garter Snake	<i>Thamnophis sirtalis sirtalis</i>
Plains Garter Snake	<i>Thamnophis radix</i>
Smooth Green Snake	<i>Ophedrys vernalis</i>
Western Hognose Snake	<i>Heterodon nasicus</i>
Bullsnake	<i>Pituophis melanoleucus</i>
Redbelly Snake	<i>Storeria occipitomaculata</i>
Common Garter Snake	<i>Thamnophis sirtalis</i>
Prairie Rattlesnake	<i>Crotalus viridis</i>

¹ This list is based on the reference "Field Guide to Amphibians and Reptiles of South Dakota" (Kiesow 2006) along with staff observations.

FISH¹

<i>Common name</i>	<i>Scientific name</i>
Logperch	<i>Percina caprodes</i>
Flathead Catfish	<i>Pylodictis olivaris</i>
Lake Trout	<i>Salvelinus namaycush</i>
Black Bullhead	<i>Ameiurus melas</i>
Yellow Bullhead	<i>Ameiurus natalis</i>
Stonecat	<i>Noturus flavus</i>
Channel Catfish	<i>Ictalurus punctatus</i>
Common Carp	<i>Cyprinus carpio</i>
White Sucker	<i>Catostomus commersoni</i>
Bigmouth Buffalo	<i>Ictiobus cyprinellus</i>

<i>Common name</i>	<i>Scientific name</i>
River Carpsucker	<i>Carpoides carpio</i>
Shorthead Redhorse	<i>Moxostoma macrolepidotum</i>
Freshwater Drum	<i>Aplodinotus grunniens</i>
Fathead Minnow	<i>Pimephales promelas</i>
Emerald Shiner	<i>Notropis atherinoides</i>
Common Shiner	<i>Luxilus cornutus</i>
Golden Shiner	<i>Notemigonus crysoleucas</i>
Creek Chub	<i>Semotilus atromaculatus</i>
Brook Stickleback	<i>Culaea inconstans</i>
Logperch	<i>Percina caprodes</i>
Johnny Darter	<i>Etheostoma nigrum</i>
White Bass	<i>Morone chrysops</i>
Rock Bass	<i>Ambloplites rupestris</i>
Smallmouth Bass	<i>Micropterus dolomieu</i>
Largemouth Bass	<i>Micropterus salmoides</i>
Bluegill	<i>Lepomis macrochirus</i>
Pumpkinseed	<i>Lepomis gibbosus</i>
Green Sunfish	<i>Lepomis cyanellus</i>
Orange-spotted Sunfish	<i>Lepomis humilis</i>
Black Crappie	<i>Pomoxis nigromaculatus</i>
White Crappie	<i>Pomoxis annularis</i>
Yellow Perch	<i>Perca flavescens</i>
Walleye	<i>Stizostedion vitreum</i>
Saugeye	<i>Stizostedion spp.</i>
Northern Pike	<i>Esox lucius</i>
Shortnose Gar	<i>Lepisosteus platostomus</i>
Gizzard Shad	<i>Dorosoma cepedianum</i>
Mooneyes	<i>Hiodon alosoides</i>

¹ This list is based on the reference “Guide to the Common Fishes of South Dakota” (Neumann and Willis 1994) along with staff observations.

BUTTERFLIES¹

<i>Common name</i>	<i>Scientific name</i>
Parnassians and Swallowtails	
Giant Swallowtail	<i>Papilio cresphontes</i>
Eastern Tiger Swallowtail	<i>Papilio glaucus</i>
Black Swallowtail	<i>Papilio polyxenes asterius</i>
Whites and Sulphurs	
Checkered White	<i>Pontia protodice</i>
Western White	<i>Pontia occidentalis</i>
Cabbage White	<i>Pieris rapae</i>
Olympia Marble	<i>Euchloe olympia</i>
Clouded Sulphur	<i>Colias philodice</i>
Orange Sulphur	<i>Colias eurytheme</i>
Dog Face	<i>Zerene cesonia</i>
Little Yellow	<i>Eurema lisa</i>
Dainty Sulphur	<i>Nathalis iole</i>
Harvesters, Coppers, Hairstreaks, and Blues	
Gray Copper	<i>Lycaena dione</i>
Bronze Copper	<i>Lycaena hyllus</i>
Purplish Copper	<i>Lycaena helloides</i>
Coral Hairstreak	<i>Satyrium titus</i>
Acadian Hairstreak	<i>Satyrium acadicum</i>
Striped Hairstreak	<i>Satyrium liparops aliparops</i>
Juniper Hairstreak	<i>Callophrys gryneus siva</i>
Gray Hairstreak	<i>Strymon melinus franki</i>
Marine Blue	<i>Leptotes marina</i>
Reakirt's Blue	<i>Hemiargus isola</i>
Eastern Tailed-Blue	<i>Everes comyntas</i>
Summer Azure	<i>Celastrina neglecta</i>
Silvery Blue	<i>Glaucopsyche lygdamus oro</i>
Melissa Blue	<i>Lycaeides melissa</i>
Skippers	
Silver-spotted Skipper	<i>Epargyreus clarus</i>
Common Checkered Skipper	<i>Pyrgus communis</i>
Common Sootywing	<i>Pholisora catullus</i>
Least Skipper	<i>Ancyloxypha numitor</i>
Poweshiek Skipperling	<i>Oarisma poweshiek</i>
Uncas Skipper	<i>Hesperia uncas</i>
Ottoe Skipper	<i>Hesperia ottoe</i>
Leonard's Skipper	<i>Herperia leonardus pawnee</i>
Dakota Skipper	<i>Hesperia dacotae</i>
Sachem	<i>Atalopedes campestris</i>
Peck's Skipper	<i>Polites peckius</i>
Tawny-edged Skipper	<i>Polites themistocles</i>
Crossline Skipper	<i>Polites origenes rhena</i>
Long Dash	<i>Polites mystic dacotah</i>

<i>Common name</i>	<i>Scientific name</i>
Arogos Skipper	<i>Atrytone arogos iowa</i>
Delaware Skipper	<i>Anatrytone logan lagus</i>
Hobomok Skipper	<i>Poanes hobomok</i>
Kiowa Skipper	<i>Euphyes vestries kiowah</i>
Common Roadside Skipper	<i>Amblyscirtes vialis</i>
Brushfoots	
American Snout	<i>Libytheana carinenta bachmanii</i>
Variiegated Fritillary	<i>Euptoieta claudia</i>
Great Spangled Fritillary	<i>Speyeria cybele</i>
Manitoba Fritillary	<i>Speyeria aphrodite manitoba</i>
Regal Fritillary	<i>Speyeria idalia</i>
Edwards' Fritillary	<i>Speyeria edwardsii</i>
Callippe Fritillary	<i>Speyeria callippe calgariana</i>
Myrina Fritillary	<i>Boloria selene myrina</i>
Meadow Fritillary	<i>Boloria bellona</i>
Gorgone Checkerspot	<i>Chlosyne gorgone carlota</i>
Silvery Checkerspot	<i>Chlosyne nycteis</i>
Pearl Crescent	<i>Phyciodes tharos</i>
Northern Crescent	<i>Phyciodes cocyta</i>
Question Mark	<i>Polygonia interrogationis</i>
Eastern Comma	<i>Polygonia comma</i>
Gray Comma	<i>Polygonia progne</i>
Mourning Cloak	<i>Nymphalis antiopa</i>
Milbert's Tortoiseshell	<i>Nymphalis milberti</i>
Red Admiral	<i>Vanessa atalanta rubria</i>
American Lady	<i>Vanessa virginiensis</i>
Painted Lady	<i>Vanessa cardui</i>
Common Buckeye	<i>Junonia coenia</i>
White Admiral	<i>Limenitis arthemis arthemis</i>
Red-spotted Purple	<i>Limenitis arthemis astyanax</i>
Viceroy	<i>Limenitis archippus</i>
Mountain Emperor	<i>Asterocampa celtis antonia</i>
Tawny Emperor	<i>Asterocampa clyton</i>
Northern Pearly-Eye	<i>Enodia anthedon</i>
Eyed Brown	<i>Satyrodes Eurydice</i>
Little Wood-Satyr	<i>Megisto cymela</i>
Prairie Ringlet	<i>Coenonympha tullia benjamini</i>
Common Wood-Nymph	<i>Cercyonis pegala nephele</i>
Monarch	<i>Danaus plexippus</i>
Uhler's Arctic	<i>Oeneis uhleri varuna</i>

¹ This list is based on the reference Field Guide to Butterflies of South Dakota (Marrone 2002) along with staff observations.

PLANTS¹

<i>Common name</i>	<i>Scientific name</i>
Absinth wormwood	<i>Artemisia absinthium</i>
Alfalfa	<i>Medicago</i> spp.
American elm	<i>Ulmus americana</i>
American Sloughgrass	<i>Beckmannia syzigachne</i>
Annual sunflower	<i>Helianthus annus</i>
Baltic rush	<i>Juncus balticus</i>
Barley	<i>Hordeum</i> spp.
Barnyardgrass	<i>Echinochloa muricata</i>
Big bluestem	<i>Andropogon gerardii</i>
Blanket flower	<i>Gaillardia aristata</i>
Bracted spiderwort	<i>Tradescantia bracteata</i>
Breadroot scurfpea	<i>Pedimelum esculentum</i>
Buffalo grass	<i>Buchloe dactyloides</i>
Bur oak	<i>Quercus macrocarpa</i>
Canada goldenrod	<i>Solidago canadensis</i>
Canada thistle	<i>Cirsium arvense</i>
Canada wildrye	<i>Elymus canadensis</i>
Cattail	<i>Typha</i> spp.
Cocklebur	<i>Xanthium strumarium</i>
Common dandelion	<i>Taraxacum officinale</i>
Common reed	<i>Phragmites australis</i>
Corn	<i>Zea mays</i>
Crested Wheatgrass	<i>Agropyron cristatum</i>
Cudweed sagewort	<i>Artemisia ludoviciana</i>
Curlycup gumweed	<i>Grindelia squarrosa</i>
Daisy fleabane	<i>Erigeron strigosus</i>
Downy brome	<i>Bromus tectorum</i>
False boneset	<i>Kuhnia eupatorioides</i>
Fescue sedge	<i>Carex brevior</i>
Field bindweed	<i>Convolvulus arvensis</i>
Field pussytoes	<i>Antennaria neglecta</i>
Foxtail barley	<i>Hordeum jubatum</i>
Goat's beard	<i>Tragopogon dubius</i>
Green ash	<i>Fraxinus pennsylvanica</i>
Green foxtail	<i>Setaria viridis</i>
Green muhly	<i>Muhlenbergia racemosa</i>
Green needlegrass	<i>Nassella viridula</i>
Green sagewort	<i>Artemisia campestris</i>
Hardstem bulrush	<i>Schoenoplectus acutus</i>
Heath aster	<i>Aster ericoides</i>
Indian breadroot	<i>Psoralea esculenta</i>
Indiangrass	<i>Sorghastrum</i> spp.
Intermediate wheatgrass	<i>Agropyron intermedium</i>
Japanese brome	<i>Bromus japonicus</i>

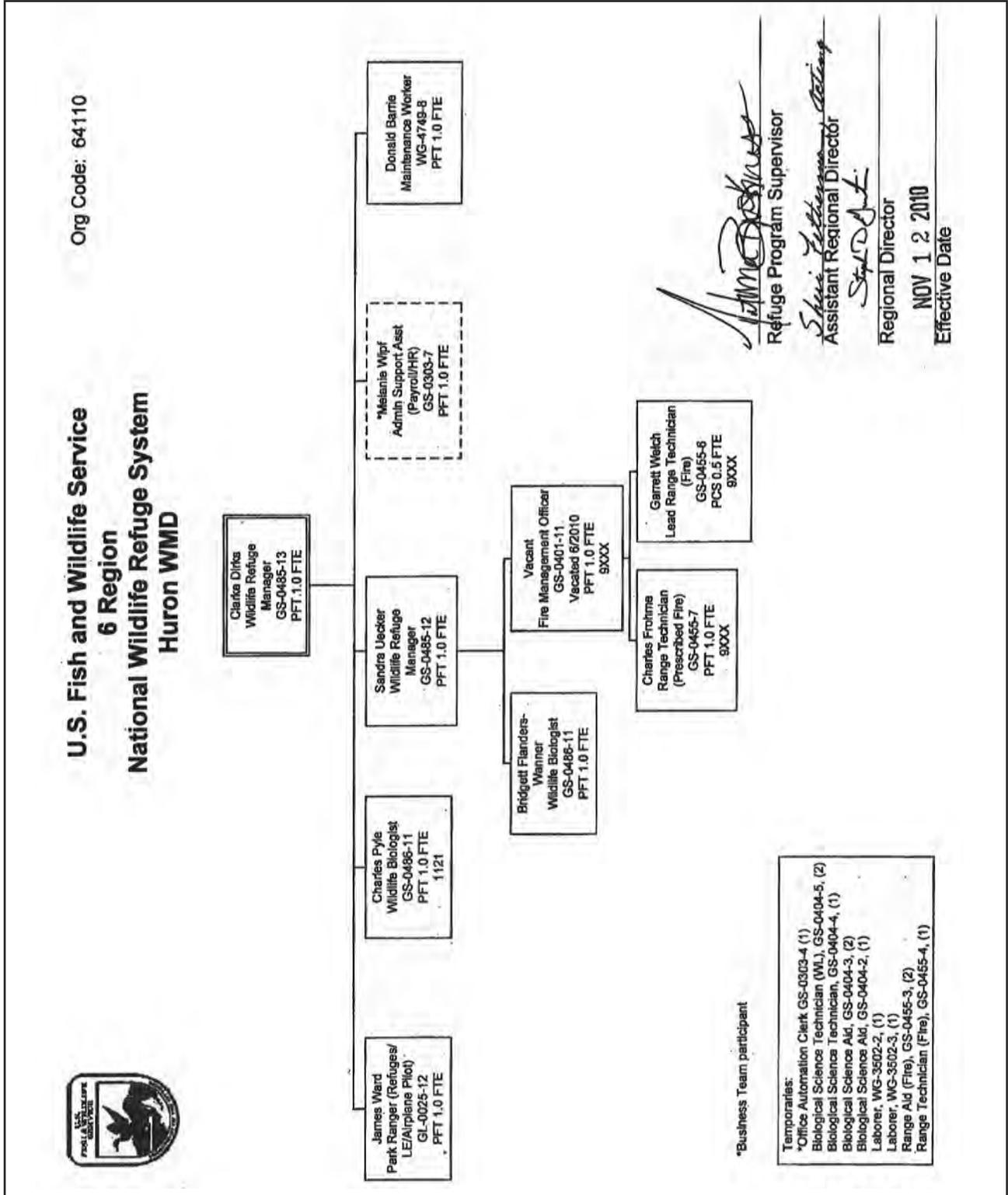
<i>Common name</i>	<i>Scientific name</i>
Junegrass	<i>Koeleria macrantha</i>
Kentucky bluegrass	<i>Poa pratensis</i>
Kochia	<i>Kochia scoparia</i>
Leadplant	<i>Amorpha canescens</i>
Leafy spurge	<i>Euphorbia esula</i>
Little bluestem	<i>Schizachyrium spp.</i>
Maximilian sunflower	<i>Helianthus maximilian</i>
Needle and thread	<i>Hesperostipa comata</i>
Pink wild onion	<i>Allium stellatum</i>
Plains cottonwood	<i>Populus deltoides</i>
Plains muhly	<i>Muhlenbergia cuspidate</i>
Porcupine grass	<i>Stipa spartea</i>
Prairie chickweed	<i>Cerastium arvense</i>
Prairie coneflower	<i>Ratibida columnifera</i>
Prairie cordgrass	<i>Spartina pectinata</i>
Prairie dropseed	<i>Sporobolus heterolepis</i>
Prairie junegrass	<i>Koeleria pyramidata</i>
Prairie wild rose	<i>Rosa arkansana</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Purple meadowrue	<i>Thalictrum dasycarpum</i>
Purple prairie clover	<i>Dalea purpurea</i>
Quackgrass	<i>Elymus repens</i>
Redtop	<i>Agrostis stolonifera</i>
Reed canarygrass	<i>Phalaris arundinacea</i>
Rush	<i>Juncus spp.</i>
Russian olive	<i>Elaeagnus angustifolia</i>
Sandbur	<i>Cenchrus longispinus</i>
Sand dropseed	<i>Sporobolus cryptandrus</i>
Scarlet globemallow	<i>Sphaeralcea coccinea</i>
Sedge	<i>Carex spp.</i>
Sideoats grama	<i>Bouteloua curtipendula</i>
Silverleaf scurfpea	<i>Pedimelum argophyllum</i>
Slender wheatgrass	<i>Elymus trachycaulus</i>
Smooth brome	<i>Bromus inermis</i>
Stiff goldenrod	<i>Solidago rigida</i>
Stiff sunflower	<i>Helianthus pauciflorus</i>
Soybean	<i>Glycine spp.</i>
Spotted knapweed	<i>Centaurea biebersteinii</i>
Spring wheat	<i>Triticum spp.</i>
Sweetclover	<i>Melilotus officinalis</i>
Switchgrass	<i>Panicum virgatum</i>
Timothy	<i>Phleum pretense</i>
Torch flower	<i>Geum triflorum</i>
Water hemlock	<i>Cicuta maculata</i>
Western ragweed	<i>Ambrosia psilostachya</i>

<i>Common name</i>	<i>Scientific name</i>
Western snowberry	<i>Symphoricarpos occidentalis</i>
Western wheatgrass	<i>Agropyron smithii</i>
White beardtongue	<i>Penstemon albidus</i>
White prairie clover	<i>Dalea candida</i>
Willow	<i>Salix</i> spp.
Witchgrass	<i>Panicum capillare</i>
Wormwood sage	<i>Artemisia absinthium</i>
Yellow foxtail	<i>Setaria glauca</i>

¹ *This list is based on the reference Grassland Plants of South Dakota and the Northern Great Plains (Johnson and Larson 2007) and Selected North Dakota and Minnesota Range Plants (Sedivec and Barker) along with staff observations.*

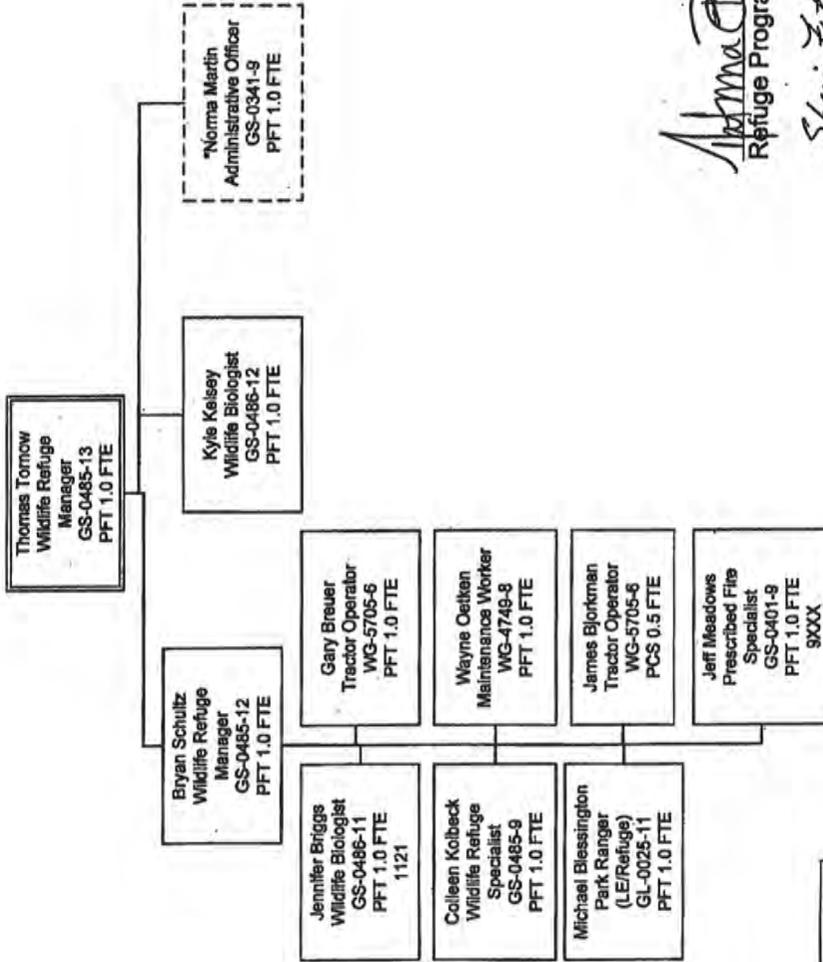
Appendix H

Approved Organization Charts



Org Code: 64560

**U.S. Fish and Wildlife Service
6 Region
National Wildlife Refuge System
Madison WMD**



Abma Bohner
Refuge Program Supervisor

Shari Fithian Acting
Assistant Regional Director

Steph D. J...
Regional Director
NOV 12 2010

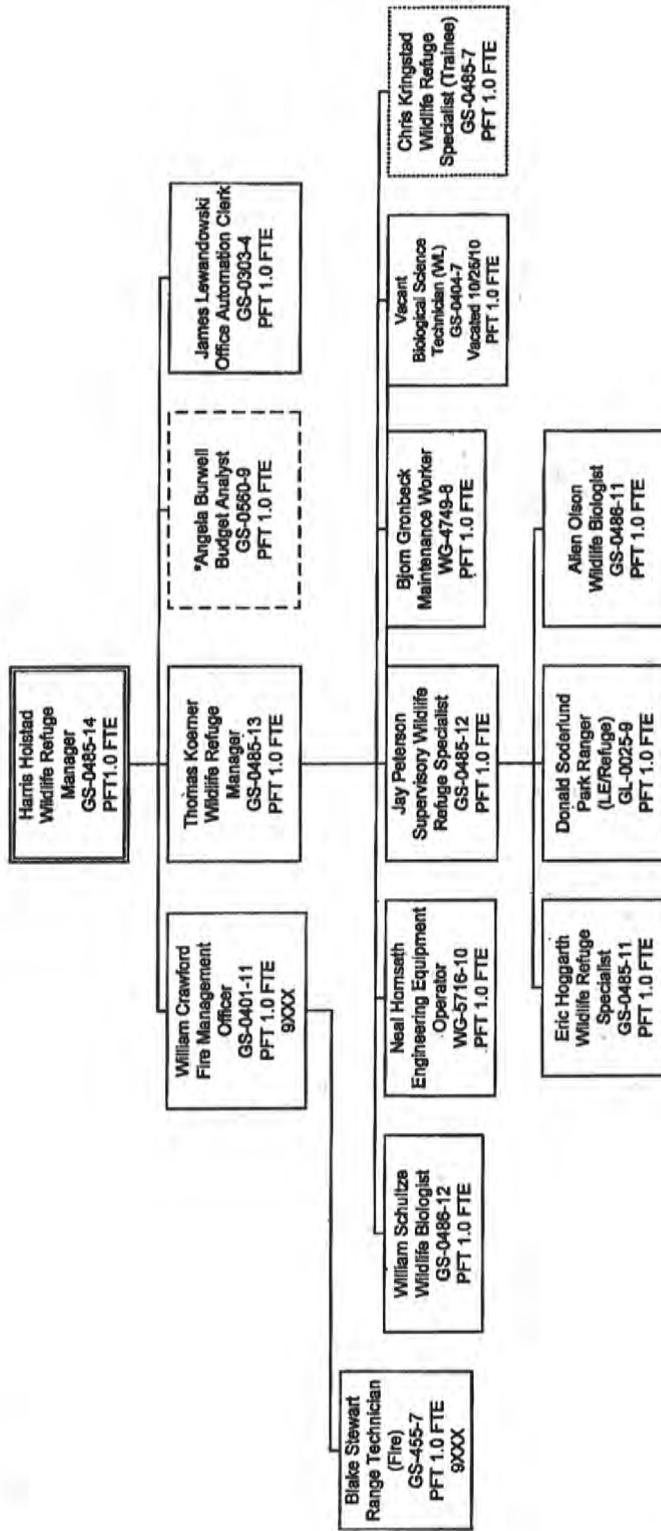
Effective Date

*Business Team participant

- Temporaries:
- Biological Science Aid, GS-0404-3, (4)
 - Biological Science Technician, GS-0404-4, (2)
 - Biological Science Technician (WL), GS-0404-7, (1)
 - Biological Science Technician, GS-0404-5, (1)
 - Laborer, WG-3502-3, (1)
 - Laborer, WG-3502-2, (1)
 - Office Automation Clerk, GS-0326-2, (1)
 - Office Automation Clerk, GS-0303-4, (1) Term

Org Code: 64570

**U.S. Fish and Wildlife Service
6 Region
National Wildlife Refuge System
Sand Lake NWR**



*Business Team participant

Temporarily:
Biological Science Aid, GS-0404-3, (7)
Range Aid (Fire), GS-0455-3, (2)

Anna B. [Signature]
Refuge Program Supervisor

Shawn [Signature]
Assistant Regional Director

[Signature]
Regional Director

NOV 1 2 2010

Effective Date

Appendix I

Compliance with Migratory Bird Treaty Act and Guidance



IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE Mountain-Prairie Region



MAILING ADDRESS:
P.O. Box 25486, DFC
Denver, Colorado 80225-0486

STREET LOCATION:
134 Union Boulevard
Lakewood, Colorado 80228-1807

SEP 23 2010

Memorandum

To: All Region 6 National Wildlife Refuge System Employees

From: Assistant Regional Director, National Wildlife Refuge System, Region 6

Subject: Compliance with Migratory Bird Treaty Act and Guidance

As many of you are aware, Refuges met with Office of Law Enforcement (OLE) and the Migratory Bird Office (MB) to develop draft guidance to field stations on compliance with Migratory Bird Treaty Act (MBTA). U. S. Fish and Wildlife Service policy 720 FW 2 describes the Agency's responsibility to protect migratory birds. We are required to evaluate projects and management practices to avoid or minimize take of migratory birds with emphasis on Birds of Management Concern, the most recent list is attached. The other two attachments described below are designed to provide Project Leaders and Partners Biologists with guidance on compliance with MBTA.

The attachment titled "Conducting National Wildlife Refuge Non-Habitat Management Activities in Region 6" is designed to provide guidance to Project Leaders on non-habitat management activities that may result in the take of migratory birds. This would include construction and rehabilitation projects, such as wetland creation/restoration, dikes/dams, water control structures, buildings, roads, wells, power lines, water lines, septic systems, and other non-habitat management activities. If your project involves anything that is on or will be placed on your Real Property Inventory, then it fits under this guidance. If you are conducting an activity of any sort besides habitat management and it could result in take of migratory birds, then this guidance should be followed. This is also the same guidance provided to corporations and the private industry by Ecological Services, MB, and OLE.

The attachment titled "Conducting National Wildlife Refuge Habitat Management Activities in Region 6" is designed to provide guidance to Project Leaders on habitat management activities that may result in the take of migratory birds. The two areas focused on were mechanical treatment (e.g., haying, mowing, tree/shrub removal, and non-chemical invasive species suppression) and prescribed fire. Guidance on these activities is outlined in this document. Other habitat management activities, such as grazing and chemical treatment of invasive species, are not defined and best management practices should be implemented.

If you have questions on the guidance provided, please contact your zone supervisor.

Attachments

Bibliography

- Ahler, S.A.; Thiessen, T.D.; Trimble, M.K. 1991. People of the willows: the prehistory and early history of the Hidatsa Indians. Grand Forks, ND: University of North Dakota Press.
- [AOU] American Ornithologists' Union. 1998. The AOU checklist of North American birds. 7th edition with supplements.
- Anderson, G.L.; Delfosse, E.S.; Spencer, N.R.; Prosser, C.W.; Richard, R.D. 2003. Lessons in developing successful invasive weed control programs. *Journal of Range Management* 56:2–12.
- Anderson, K.L.; Smith, E.F.; Owensby, C.E. 1970. Burning bluestem range. *Journal of Range Management* 23:81–92.
- Anderson, R.C. 1990. The historic role of fire in the North American grassland. In: Collins, S.L.; Wallace, L.L.; editors. *Fire in North American tall-grass prairies*. Norman, Oklahoma: University of Oklahoma Press. 8–18.
- Austin, J.E. 1998. Highlight box: waterfowl in the Prairie Pothole Region. In: Mac, M.J.; Opler, P.A.; Puckett Haecker, C.E.; Doran, P.D.; editors. *Status and trends of the nation's biological resources, vol. 2*. [Internet]. Version 21JAN2000. Jamestown, ND: Northern Prairie Wildlife Research Center online. <<http://www.npwrc.usgs.gov/resource/2000/grlands/grlands.htm>> 456–7.
- Austin, J.E.; Richert, A.L. 2001. A comprehensive review of observational and site evaluation data of migrant whooping cranes in the United States, 1943–1999. Jamestown, ND: U.S. Geological Survey, Northern Prairie Wildlife Research Center. 157 p.
- Axelrod, D.I. 1985. Rise of the grassland biome, Central North America. *Botanical Review* 51:163–201.
- Baer, N.W. 1989. Shelterbelts and windbreaks in the Great Plains. *Journal of Forestry* 87:32–6.
- Bakker, K.K. 2003. A synthesis of the effect of woody vegetation on grassland-nesting birds. In: *Proceedings, South Dakota Academy of Science*; [Date of conference unknown]; [Location of conference unknown]. [Location of publisher unknown]: [Publisher unknown]. 119–41.
- . 2005. South Dakota all bird conservation plan. South Dakota Department of Game, Fish and Parks, Pierre, South Dakota. Wildlife Division Report 2005–09. 131 p.
- Bakker, K.K.; Higgins, K.F. 2009. Planted grasslands and native sod prairie: equivalent habitat for grassland birds? *Western North American Naturalist* 69:235–242.
- Bakker, K.K.; Naugle, D.E.; Higgins, K.F. 2002. Incorporating landscape attributes into models for migratory grassland bird conservation. *Conservation Biology* 16:1638–46.
- Barker, W.T.; Sedivec, K.K.; Messmer, T.A.; Higgins, K.F.; Hertel, D.R. 1990. Effects of specialized grazing systems on waterfowl production in south central North Dakota. *Transactions of the 55th North American Wildlife and Natural Resources Conference* 55:462–474.
- Batt, B.D.; Anderson, M.G.; Anderson, C.D.; Caswell, F.D. 1989. The use of prairie potholes by North American ducks. In: van der Valk, A.; editor. *Northern prairie wetlands*. Ames, IA: Iowa State University Press. 204–27.
- Bedunah, D.J. 1992. The complex ecology of weeds, grazing, and wildlife. *Western Wildlands* 18:6–11.
- Biondini, M. 2007. Plant diversity, production, stability, and susceptibility to invasion in restored northern tall grass prairies (United States). *Restoration Ecology* 15:77–87.
- Blankespoor, G.W. 1987. The effects of prescribed burning on a tall-grass prairie remnant in eastern South Dakota. *Prairie Naturalist* 19:177–188.
- Blumenthal, D.M.; Jordan, N.R.; Svenson, E.L. 2003. Weed control as a rationale for restoration: the example of tallgrass prairie. *Conservation Ecology* 7(1):6.
- Bonnichsen, R.; Stanford, D.; Fastook, J.L. 1987. Environmental change and developmental history of human adaptive patterns: the paleoindian case. In: Ruddiman, W.F.; Wright, H.E., Jr.; editors. *North America and adjacent oceans during the last deglaciation. The Geology of North America, Vol. K-3*:403–424. Geological Society of America, Boulder, CO.
- Bragg, T.B. 1982. Seasonal variations in fuel and fuel consumption by fires in a bluestem prairie. *Ecology* 63(10):7–11.
- . 1995. The physical environment of Great Plains grasslands. In: Keeler, K.; Joern, A.; editors. *The changing prairie*. New York: Oxford University Press. 49–81.
- Bragg, T.B.; Steuter, A.A. 1996. Prairie ecology—the mixed prairie. In: Samson, F.B.; Knopf, F.L.;

- editors. *Prairie conservation*. Washington, DC: Island Press. 53–65.
- Briggs J.M.; Gibson, D.J. 1992. Effect of fire on tree spatial patterns in a tallgrass prairie landscape. *Bulletin of the Torrey Botanical Club* 119:300–307.
- Brown, M.; Dinsmore, J.J. 1986. Implications of marsh size and isolation for marsh bird management. *Journal of Wildlife Management* 50:392–397.
- Bryce, S.A.; Omernik, J.M.; Pater, D.A. [et al.]. 1996. Ecoregions of North Dakota and South Dakota [color poster with map, descriptive text, summary tables, and photographs]. Reston, VA: U.S. Geological Survey. [Map scale 1:1,500,000].
- Burger, L.D.; Burger, L.W., Jr.; Faaborg, J. 1994. Effects of prairie fragmentation on predation on artificial nests. *Journal of Wildlife Management* 58:249–54.
- Carpinelli, M.F. 2001. Designing weed-resistant plant communities by maximizing niche occupation and resource capture. [Ph.D. dissertation]. Bozeman, MT: Montana State University.
- Carver, Erin; Caudill, James. 2007. Banking on nature 2006: the economic benefits to local communities of National Wildlife Refuge Visitation. Washington, DC: Division of Economics, U.S. Fish and Wildlife Service.
- Case, T.J. 1990. Invasion resistance arises in strongly interacting species-rich model competition communities. *Proceedings, National Academy of Science* 87:9610–9614.
- Caudill, James; Carver, Erin. 2007. Banking on nature 2006: the economic benefits to local communities of national wildlife refuge visitation. [Location of publisher unknown]: U.S. Fish and Wildlife Service, division of economics. 372 p.
- Centers for Disease Control and Prevention. 2003. Epidemic/epizootic West Nile virus in the United States: guidelines for surveillance, prevention, and control. Fort Collins, CO: U.S. Department of Health and Human Services Public Health Service Centers for Disease Control and Prevention National Center for Infectious Diseases Division of Vector-Borne Infectious Diseases. 3rd Revision.
- Christian, J.M.; Wilson, S.D. 1999. Long-term ecosystem impacts of an introduced grass in the northern great plains. *Ecology* 80:2397–2407.
- Clark, R.G.; Nudds, T.D. 1991. Habitat patch size and duck nesting success: the crucial experiments have not been performed. *Wildlife Society Bulletin* 19:534–543.
- Cochrane, J.F.; Delphey, P. 2002. Status assessment and conservation guidelines. Bloomington, Minnesota: U.S. Fish and Wildlife Service. 80 p.
- Collins, S.L. 1987. Interaction of disturbances in tallgrass prairie: a field experiment. *Ecology* 68:1243–1250.
- Collins, S.L.; Barber, S.C. 1985. Effects of disturbance on diversity in mixed-grass prairie. *Vegetation* 64:87–94.
- Collins, S.L.; Uno, G.E. 1983. The effect of early spring burning on vegetation in buffalo wallows. *Bulletin of the Torrey Botanical Club* 110:474–481.
- Collins, S.L.; Wallace, L.L.; editors. 1990. *Fire in North American tallgrass prairies*. Norman OK: University of Oklahoma Press.
- Cook, H.H.; Powers, C.F. 1958. Early biochemical changes in the soils and waters of artificially created marshes in New York. *New York Game and Fish Journal* 5:9–65.
- Cowardin, L.M.; Carter, V.; Golet, F.C.; LaRoe, E.T. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31. Washington, DC: GPO.
- Dahl, T.E. 2000. Status and trends of wetlands in the conterminous United States 1986 to 1997. Washington, D.C.: U.S. Department of the Interior, Fish and Wildlife Service. 82 p.
- Dai, X.; Boutton, T.W.; Hailemichael, M. [et al.]. 2006. Soil carbon and nitrogen storage in response to fire in a temperate mixed-grass savanna. *Journal of Environmental Quality* 35:1620–8.
- Davis, M.A.; Pelsor, M. 2001. Experimental support for a resource based mechanistic model of invisibility. *Ecology Letters* 4:421–428.
- Dechant, J.A.; Sondreal, M.L.; Johnson, D.H.; Igl, L.D.; Goldade, C.M.; Nenneman, M.P.; Euliss, B. R. 1999 (revised 2002). Effects of management practices on grassland birds: Wilson's Phalarope. Northern Prairie Wildlife Research Center, Jamestown, ND. 15 pages.
- Diboll, N. 1997. Designing seed mixes. In: Packard, S.; Mutel, C.F.; editors. *The tallgrass restoration handbook*. Washington, DC: Island Press. 135–150.
- Dill, T.O.; Waller, S.S.; Vogel K.P.; Gates, R.N.; Stroup, W.W. 1986. Renovation of seeded warm-season pastures with atrazine. *Journal of Range Management* 39:72–75.
- Doak, D.; Pollock, J.; Rose, A.; Knowlton, J.; Booth, M.; Parker, I. 2009. Statistical/modeling tools for design and analysis of conservation monitoring data. Department of Ecology and Evolutionary Biology, University of California, Santa Cruz, CA. 13 March 2009. <<http://bio.research.ucsc.edu/people/doaklab/natconserv/>>.
- Domek, Tom. 1998. Last call for tallgrass in North Dakota. [Internet]. Version October 02, 998. Jamestown, ND: Northern Prairie Wildlife Research Center online. <<http://www.npwrc.usgs.gov/resource/plants/tallgrass/lastcall.htm>> North Dakota Outdoors 60(10):14–19.
- Dornfeld, R. 1988. Wetland restoration: a mid-continent waterfowl management project final activity report. Twin Cities, MN: U.S. Department of the Interior, Fish and Wildlife Service. 36 p.

- Duebbert, H.F.; Frank, A.M. 1984. Value of prairie wetlands to duck broods. *Wildlife Society Bulletin* 12:27–34.
- Duebbert, H.F.; Jacobson, E.T.; Higgins, K.F.; Podoll, E.B. 1981. Establishment of seeded grasslands for wildlife habitat in the prairie pothole region. Special Scientific Report—Wildlife No. 234. Washington, DC: U.S. Department of the Interior, Fish and Wildlife Service. [Pages unknown].
- Dukes, J. 2001. Biodiversity and invisibility in grassland microcosms. *Oecologia* 126:563–568.
- Estey, Mike. 2007. [Title of unpublished report unknown]. [Location where on file unknown]. U.S. Department of the Interior, Fish and Wildlife Service, Habitat and Population Evaluation Team. [Pages unknown].
- Euliss, N.H. Jr.; LaBaugh, J.W.; Fredrickson, L.H. [et al.]. 2004. The wetland continuum: a conceptual framework for interpreting biological studies. *Wetlands* 24:448–58.
- Fairbairn, S.E.; Dinsmore, J.J. 2001. Local and landscape level influences on wetland bird communities of the prairie pothole region of Iowa, USA. *Wetlands* 21: 41–47.
- Federal Register, March 11, 1967. vol 32. no. 48. http://ecos.fws.gov/docs/federal_register/fr18.pdf
- Fredrickson, L.H. 1991. Strategies for water level manipulations in moist-soil systems. U.S. Fish and Wildlife Service, Waterfowl Management Handbook, Fish and Wildlife Leaf et. 13.4.6. Washington, DC: U.S. Department of the Interior, Fish and Wildlife Service.
- Friend M.; Franson, J.C. 1999. Field manual of wildlife diseases, general field procedures and diseases of birds. U.S. Department of the Interior, Geological Survey, Information and Technology Report 1999-001. [Pages unknown].
- Fuhlendorf, S.D.; Engle, D.M. 2004. Application of the fire-grazing interaction to restore a shifting mosaic on tallgrass prairie. *Ecology* 41:604–614.
- Gazda, R.J.; Meidinger, R.R.; Ball, I.J.; Connelly, J.W. 2002. Relationships between Russian olive and duck nest success in southeastern Idaho. *Wildlife Society Bulletin* 30:337–44.
- Gibson, D.J.; Hulbert, L.C. 1987. Effects of fire, topography and year-to-year climatic variation on species composition in tall grass prairie. *Vegetation* 72:175–185.
- Gillen, R.L.; Rollins, D.; Strizke, J.F. 1987. Atrazine, spring burning, and nitrogen for improvement of tallgrass prairie. *Journal of Range Management* 40:444–447.
- Gleason, R.A.; Laubhan, M.K.; Euliss, N.H. 2008. Ecosystem services derived from wetland conservation practices in the United States Prairie Pothole Region with an emphasis on the US Department of Agriculture Conservation Reserve and Wetlands Reserve Programs. US Geological Survey. Professional Paper 1745.
- Grant, T.A.; Flanders-Wanner, B.L.; Shaffer, T.L.; Murphy, R.K.; Knutsen, G.A. 2009. An emerging crisis across northern prairie refuges: prevalence of invasive plants and a plan for adaptive management. *Ecological Restoration* 27(1):58–65.
- Grant, T.A.; Madden, E.M.; Murphy, R.K.; Nenneman, M.P.; Smith, K.A. 2004a. Monitoring native prairie vegetation: the belt transect method. *Ecological Restoration* 22:106–111.
- Grant, T.A.; Madden, E.; Berkey, G.B. 2004b. Tree and shrub invasion in northern mixed-grass prairie: implications for breeding grassland birds. *Wildlife Society Bulletin* 32:807–18.
- Grant, W.E.; Birney, E.C.; French, N.R.; Swift, D.M. 1982. Structure and productivity of grassland small mammal communities related to grazing-induced changes in vegetative cover. *Journal of Mammology* 63:248–260.
- Greenwood, R.J.; Sargeant, A.B.; Johnson, D.H.; Cowardin, L.M.; Shaffer, T.L. 1995. Factors associated with duck nest success in the Prairie Pothole Region of Canada. *Wildlife Monographs* 128:1–57.
- Greer, M.J. 2009. An evaluation of habitat use and requirements for grassland bird species of greatest conservation need in central and western South Dakota. [master's thesis]. Brookings, SD: South Dakota State University. 176 p.
- Gregg, M.L.; Meyer, D.; Picha, P.R.; Stanley, D.G. 1996. Archeology of the northeastern plains. In Frison, G.C.; Mainfort, R.C.; editors. Archeological and bioarcheological resources of the northern plains. 77–90. Research Series No. 47. Arkansas Archeological Survey, Fayetteville.
- Guo, Q.; Shaffer, T. 2006. Community maturity, species saturation and the variant diversity–productivity relationships in grasslands. *Ecology Letters* 9:1–9.
- Hamer, T.L.; Flather, C.H.; Noon, B.R. 2006. Factors associated with grassland bird species richness: the relative roles of grassland area, landscape structure, and prey. *Landscape Ecology* 21:569–583.
- Hanowski, J.M.; Christian, D.P.; Niemi, G.J. 2000. Landscape requirements of prairie sharp-tailed grouse *Tympanuchus phasianellus campestris* in Minnesota, USA. *Wildlife Biology* 6:257–63.
- Herkert, J.R. 1994. The effects of habitat fragmentation on midwestern grassland bird communities. *Ecological Applications* 4:461–471.
- Herkert, J.R. 1995. An analysis of Midwestern breeding bird population trends: 1966–1993. *American Midland Naturalist* 134:41–50.
- Herkert, J.R.; Reinking, D.L.; Wiedenfeld, D.A.; Winter, M.; Zimmerman, J.L.; Jensen, W.E.; Finck, E.J.; Koford, R.R.; Wolfe, D.H.; Sherrod, S.K.; Jenkins, M.A.; Faaborg, J.; Robinson, S.K. 2003. Effects of prairie fragmentation on the nest success

- of breeding birds in the mid continental United States. *Conservation Biology* 17:587–594.
- Hickman, K.R.; Farley, G.H.; Channell, R.; Steier, J.E. 2006. Effects of old world bluestem (*Bothriochloa ischaemum*) on food availability and avian community composition within the mixed-grass prairie. *Southwestern Naturalist* 51:524–530.
- Higgins, K.F. 1986. Interpretation and compendium of historical fire accounts in the northern Great Plains. Resource Publication 161. Washington, DC: U.S. Department of the Interior, Fish and Wildlife Service. [Pages unknown].
- Higgins, K.F.; Barker, W.T. 1982. Changes in vegetation structure in seeded nesting cover in the prairie pothole region. U.S. Fish and Wildlife Service Special Science Report—Wildlife 242. Washington, DC: U.S. Department of the Interior, Fish and Wildlife Service. [Pages unknown].
- Higgins, K.F., Dowd-Stukel, E., Goult, J.M., and D.C. Backlund. 2000. Wild mammals of South Dakota. Pierre, SD: South Dakota Department of Game, Fish and Parks.
- Hill, G.R.; Platt, W.J. 1975. Some effects of fire upon a tallgrass prairie plant community in northwestern Iowa. In: Wali, M.K.; editor. *Prairie: a multiple view*. Proceedings, Symposium on prairie restoration. Grand Forks, ND: University of North Dakota. 103–113.
- Howe, H.F. 1994. Managing species diversity in tall-grass prairie: assumptions and implications. *Conservation Biology* 8:691–704.
- Howell, E.A. 1988. The role of restoration in conservation biology. *Endangered Species* 5:1–4.
- Hulbert, L.C. 1969. Fire and litter effects in undisturbed bluestem prairie in Kansas. *Ecology* 50:874–877.
- . 1986. Fire effects on tallgrass prairie. In: Clambey, G.K.; Pemble, R.H.; editors. *The prairie: past, present, and future*. Proceedings, 9th North American prairie conference. Fargo, ND: Tri-College University Center for Environmental Studies. 138–142.
- Hunt, H.W.; Trlica, M.J.; Redente, E.F.; Moore, J.C.; Detling J.K.; Kittel, T.G.F.; Walter, D.E.; Fowler, M.C.; Klein, D.A.; Elliott, E.T. 1991. Simulation model for the effects of climate change on temperate grassland ecosystems. *Ecological Modelling* 53:205–246.
- Hutchinson, M. 1992. Vegetation management guideline: Canada thistle (*Cirsium arvense* [L.] Scop.). *Natural Areas Journal* 12:160–1.
- Igl, L.D.; Johnson, D.H. 1995. Migratory bird population changes in North Dakota. In: LaRoe, E.T.; Farris, G.S.; Puckett, C.E. [et al.]; editors. *Our living resources*. [Location of publisher unknown]: U.S. Department of the Interior. 298–300.
- . 1997. Changes in breeding bird populations in North Dakota: 1967 to 1992–93. *Auk* 114:74–92.
- [ISSG] Invasive Species Specialist Group. 2001. 100 of the world's worst invasive alien species: a selection from the global invasive species database. May. Auckland, New Zealand: ISSG. Available online: <<http://iucn.org/biodiversityday/100booklet.pdf>> accessed July 19, 2001.
- Jackson, A.S. 1965. Wildfires in the great plains grasslands. Proceedings, tall timbers fire ecology conference. 4:241–259.
- Jackson, M.A.; Toom, D.L. 1999. Cultural resources overview studies of the Tewaukon National Wildlife Refuge, Sargent County, North Dakota, and the Waubay National Wildlife Refuge, Day County, South Dakota. Report prepared for the U.S. Fish and Wildlife Service, Denver. (SARC Archive Number ADA-0038).
- Jacobs, J.S.; Sheley, R.L. 1999. Competition and niche partitioning among *Pseudoroegneria spicata*, *Hedysarum boreale*, and *Centaurea maculosa*. *Great Basin Naturalist* 59:175–181.
- Johnson, Douglas H. 2006a. Terrestrial bird communities on the Woodworth study area. [Internet]. Revised August 3, 2006. Jamestown, ND: Northern Prairie Wildlife Research Center online. <<http://www.npwrc.usgs.gov/resource/habitat/woodwort/johnson.htm>>.
- . 2006b. Conservation Reserve Program (CRP) grassland bird use of conservation reserve program fields in the Great Plains. In: Farm Bill Contributions to Wildlife Conservation. [Internet]. Wildlife Habitat Management Institute online. <<ftp://ftp-fc.sc.egov.usda.gov/WHMI/WEB/CompRev/Johnson19-34.pdf>> 19–33.
- Johnson, Douglas H.; Haseltin, Susan S.D.; Cowardin, Lewis M. 1994. Wildlife habitat management on the northern prairie landscape. [Internet]. Version 30APR2001. Jamestown, ND: Northern Prairie Wildlife Research Center online. <<http://www.npwrc.usgs.gov/resource/habitat/whabmgmt/index.htm>> Landscape and Urban Planning 28:5–21.
- Johnson, Douglas H.; Igl, L.D. 2001. Area requirements of grassland birds; a regional perspective. *Auk* 118:24–34.
- Johnson, Douglas H.; Igl, Lawrence D.; Dechant Shaffer, Jill A. [series coordinators]. 2004. Effects of management practices on grassland birds. [Internet]. Version 12AUG2004. Jamestown, ND: Northern Prairie Wildlife Research Center online. <<http://www.npwrc.usgs.gov/resource/literatr/grasbird/index.htm>>.
- Johnson, J.R., Larson, G.E. 2007. Grassland plants of South Dakota and the Northern Great Plains. Brookings, SD: South Dakota State University.
- Johnson, L.C.; Matchett, J.R. 2001. Fire and grazing regulate belowground processes in tallgrass prairie. *Ecology* 82:3377–3389.

- Johnson, R.G.; Temple, S.A. 1990. Nest predation and brood parasitism of tall grass prairie birds. *Journal of Wildlife Management* 54(1):106–11.
- Jordan, N.R.; Larson, D.L.; Huerd, S.C. 2008. Soil modification by invasive plants: effects on native and invasive species of mixed-grass prairies. *Biological Invasions* 10:177–190.
- Kadlec, J.A.; Smith, L.M. 1992. Habitat management for breeding areas. In: Batt, B.D.J.; Afton, A.D.; Anderson, M.G. [et al.]; editors. *Ecology and management of breeding waterfowl*. Minneapolis, MN: University of Minnesota. [Pages unknown].
- Kantrud, Harold A. 1983. An environmental overview of North Dakota: past and present. [Internet]. Version July 16, 1997. Jamestown, ND: Northern Prairie Wildlife Research Center online. <www.npwr.usgs.gov/resource/habitat/envovrvw/index.htm>.
- Kantrud, H.A.; Higgins, K.F. 1992. Nest and nest site characteristics of some ground-nesting non-passerine birds of northern grasslands. *Prairie Naturalist* 24:67–84.
- Kantrud, Harold A.; Krapu, Gary L.; Swanson, George A.; Allen, James A. 1989. Prairie basin wetlands of the Dakotas: a community profile. [Internet]. Version 16JUL1997. Jamestown, ND: Northern Prairie Wildlife Research Center online. <http://www.npwr.usgs.gov/resource/wetlands/basinwet/index.htm>.
- Kantrud, H.A.; Stewart, R.E. 1984. Ecological distribution and crude density of breeding birds on prairie wetlands. *Journal of Wildlife Management* 48:426–437.
- Kelsey, K.W.; Naugle, D.E.; Higgins, K.F.; Bakker, K.K. 2006. Planting trees in prairie landscapes: do the ecological costs outweigh the benefits? *Natural Areas Journal* 26(3):254–60.
- Kiesow, Alyssa. 2006. Field guide to amphibians and reptiles of South Dakota. Pierre, SD: South Dakota Department of Game, Fish, and Parks.
- Kirby, D.R.; Carlson, R.B.; Krabbenhoft, K.D.; Mundal, D.; Kirby, M.M. 2000. Biological control of leafy spurge with introduced flea beetles (*Aphthona* sp.). *Journal of Range Management* 53:305–308.
- Kirsch, L.M.; Duebbert, H.F.; Kruse, A.D. 1978. Grazing and haying effects on habitats of upland nesting birds. *Transactions of the North American Wildlife and Natural Resources Conference* 43:486–497.
- Kirsch, L.M.; Kruse, A.D. 1973. Prairie fires and wildlife. In: *Proceedings, annual Tall Timbers fire ecology conference; 1972 June 8–9; Lubbock, TX. Tallahassee, FL: Tall Timbers Research Station. 12:289–303.*
- Klett, A.T.; Duebbert, H.F.; Heismeyer, G.L. 1984. Use of seeded native grasses as nesting cover by ducks. *Wildlife Society Bulletin* 12:134–8.
- Knapp, A.K. 1984. Post-burn differences in solar radiation, leaf temperature and water stress influencing production in a low-land tallgrass prairie. *American Journal of Botany* 71:220–227.
- . 1985. Effects of fire and drought on the eco-physiology of *Andropogon gerardii* and *Panicum virgatum* in tall grass prairie. *Ecology* 66:1309–1320.
- Knapp, A.K.; Seastedt, T.R. 1986. Detritus accumulation limits productivity of tallgrass prairie. *BioScience* 36:662–668.
- Knopf, F. L. 1994. Avian assemblages on altered grasslands. In: Jehl, J.R., Jr.; Johnson, N.K.; editors. *A century of avifaunal change in western North America. 247–257.*
- Knops, J.M.H. 2006. Fire does not alter vegetation in infertile prairie. *Oecologia* 150:477–483.
- Knutsen, G.A.; Euliss, N.H. 2001. Wetland restoration in the Prairie Pothole Region of North America: a literature review. U.S. Geological Survey, Biological Science Report. [Location of publisher unknown]: U.S. Geological Survey. 55 p.
- Kruse, A.D.; Bowen, B.S. 1996. Effects of grazing and burning on densities and habitats of breeding ducks in North Dakota. *Journal of Wildlife Management* 60:233–246.
- Kuehl, A.K.; Clark, W.R. 2002. Predator activity related to landscape features in northern Iowa. *Journal of Wildlife Management* 66:1224–34.
- Larivière, S.; Messier, F. 1998. Effect of density and nearest neighbours on simulated waterfowl nests: can predators recognize high-density nesting patches? *Oikos* 83:12–20.
- Larson, M.A.; Ryan, M.R.; Murphy, R.K. 2002. Population viability of piping plovers: effects of predator exclusion. *Journal of Wildlife Management* 66:361–71.
- Laubhan, M.K.; Gleason, R.A.; Knutsen, G.A.; Laubhan, R.A.; Euliss, N.H. Jr. 2006. A preliminary biological assessment of Long Lake National Wildlife Refuge, North Dakota. Washington, DC: U.S. Department of Interior, Fish and Wildlife Service, Biological Technical Publication, FWS/BTP-R6006-2006. 66 p.
- Leitch, J.A. 1989. Politicoeconomic overview of prairie potholes. In: van der Valk, A., editor. *Northern Prairie Wetlands*. Ames, IA: Iowa State University. 3–14.
- Lloyd, J.D.; Martin, T.E. 2005. Reproductive success of chestnut-collared longspurs in native and exotic grassland. *The Condor* 107(2):363–374.
- Lokemoen, J.T. 1984. Examining economic efficiency of management practices that enhance waterfowl production. In: *Transactions of the North American Wildlife and Natural Resources Conference; [Date of conference unknown]; [Location of conference unknown]. [Location of publisher unknown]; [Publisher unknown]. 49:584–607.*
- Lorenzana, J.C.; Sealy, S.G. 1999. A meta-analysis of the impact of parasitism by the brown-headed cowbird on its hosts. *Studies in Avian Biology* 18:241–53.

- Madden, E.M.; Murphy, R.K.; Hansen, A.J.; Murray, L. 2000. Models for guiding management of prairie birds habitat in northwestern North Dakota. *The American Midland Naturalist* 144(2):377–92.
- Marrone, Gary. 2002. Field guide to butterflies of South Dakota. Pierre, SD: South Dakota Department of Game, Fish and Parks.
- McIntyre, N. E.; Thompson, T.R. 2003. A comparison of Conservation Reserve Program habitat plantings with respect to arthropod prey for grassland birds. *American Midland Naturalist* 150:291–301.
- McLauchlan, K.K.; Hobbie, S.E.; Post, W.M. 2006. Conversion from agriculture to grassland builds soil organic matter on decadal timescales. *Ecological Applications* 16:143–153.
- Moechnig, M.; Wrage, L.J.; Deneke, D.L. 2009. Noxious weed control: 2009. South Dakota State University. <<http://agbiopubs.sdstate.edu/articles/FS525N.pdf>>.
- Murkin, H.; van der Valk, A.G.; Clark, W.R. 2000. *Prairie wetland ecology: the contribution of the marsh ecology research program*. Ames, IA: Iowa State University Press.
- Murphy, R.K., editor. 2005. *Conservation strategy and guidelines for Dakota skippers on Service lands in the Dakotas*. Bismarck, ND: U.S. Department of the Interior, Fish and Wildlife Service, refuges and wildlife and ecological services, Dakota skipper committee. 23 p.
- Murphy, R.K.; Grant, T.A. 2005. Land management history and floristics in mixed-grass prairie, North Dakota, USA. *Natural Areas Journal* 25:351–358.
- Murphy, R.K.; Grant, T.A.; Madden, E.M. 2005. Prescribed fire for fuel reduction in northern mixed grass prairie: influence on habitat and population dynamics of indigenous wildlife. *Joint Fire Science Program RFP 2001–3:1–40*.
- [NRCS] Natural Resources Conservation Service. 1999. *Soil taxonomy: a basic system of soil classification for making and interpreting soil surveys*. 2nd edition. Agriculture Handbook Number 436. U.S. Department of Agriculture.
- Naugle, D.E.; Bakker, K.K.; Higgins, K.F. 2000. A synthesis of the effects of upland management practices on waterfowl and other birds in the northern great plains of the U.S. and Canada. *Wildlife Technical Report* 1. 28 p.
- Naugle, D.E.; Estey, M.E.; Higgins, K.F.; Johnson, R.R. 2001. A landscape approach to conserving wetland bird habitat in the Prairie Pothole Region of eastern South Dakota. *Wetlands* 21:1–17.
- Naugle, D.E.; Higgins, K.F.; Nusser, S.M. 1999. Effects of woody vegetation on prairie wetland birds. *Canadian Field–Naturalist* 113:487–92.
- Naugle, D.E.; Quamen, F.R. 2007. *Assessing the impacts of tree plantings on grassland birds in North and South Dakota*. Completion Report for North Dakota State Wildlife Grant #T19. [Location where on file unknown]. 25 p.
- Nenneman, M.P. 2003. *Vegetation structure and floristics at nest sites of grassland birds in north central North Dakota*. [master's thesis]. Missoula, MT: University of Montana. [Pages unknown].
- Neuman, R.W. 1975. *The Sonota Complex and associated sites on the Northern Great Plains*. Publications in Anthropology No. 6. Lincoln, NE: Nebraska State Historical Society.
- Nichols, J.D.; Williams, B.K. 2006. Monitoring for conservation. *Trends in Ecology and Evolution* 21(12):668–673.
- Niemuth, N.D. 2000. Land use and vegetation associated with greater prairie chicken leks in an agricultural landscape. *Journal of Wildlife Management* 64:278–86.
- Niemuth, N.D.; Estey, M.E.; Reynolds, R.E.; Loesch, C.R.; Meeks, W.A. 2006. Use of wetlands by spring-migrant shorebirds in agricultural landscapes of North Dakota's Drift Prairie. *Wetlands* 26:30–39.
- North American Bird Conservation Initiative, U.S. Committee. 2009. *The state of the birds, United States of America, 2009*. Washington, DC: U.S. Department of Interior. 36 pages.
- [NAWMA] North American Weed Management Association. 2002. *North American invasive plant mapping standards*. <<http://www.nawma.org/>> accessed February 16, 2010.
- [NDGF] North Dakota Game and Fish Department. 2005. *Mixed-grass prairie (Missouri Coteau)*. In: *North Dakota comprehensive wildlife conservation strategy*. [Internet]. <<http://gf.nd.gov/conservation/docs/section%205.3%20mixedgrass%20prairie-missouri%20coteau.pdf>> 54–7.
- North Dakota Parks and Recreation Department. [No date]. *North Dakota prairie—our natural heritage*. [Internet]. Version 05MAY99. Jamestown, ND: Northern Prairie Wildlife Research Center online. <<http://www.npwrc.usgs.gov/resource/habitat/heritage/index.htm>>
- Noss, R.F.; LaRoe, E.T.; Scott, J.M. 1995. *Endangered ecosystems of the United States: a preliminary assessment of loss and degradation*. Report No. 0611-R-01 (MF). Washington, DC: National Biological Service.
- O'Leary, C.H.; Nyberg, D.W. 2000. Treelines between fields reduce the density of grassland birds. *Natural Areas Journal* 20:243–9.
- Old, S.M. 1969. Microclimate, fire, and plant production in an Illinois prairie. *Ecological Monographs* 39:355–348.
- Ortega, Y.K.; Pearson, D.E. 2005. Weak vs. strong invaders of natural plant communities: assessing invasibility and impact. *Ecological Applications* 15:651–661.

- Ortman, J.; Stubbendieck, J.; Mitchell, R. 1996. Management of eastern redcedar on grasslands. University of Nebraska-Lincoln Cooperative Extension Publication.
- Pampush, G.J.; Anthony, R.G. 1993. Nest success, habitat utilization and nest-site selection of long-billed curlews in the Columbia Basin, Oregon. *Condor* 95:957-967.
- Patten, M.A.; Shochat, E.; Reinking, D.L.; Wolfe, D.H.; Sherrod, S.K. 2006. Habitat edge, land management, and rates of brood parasitism in tallgrass prairie. *Ecological Applications* 16:687-95.
- Pedlar, J.H.; Fahrig, L.; Merriam, G.H. 1997. Raccoon habitat use at 2 spatial scales. *Journal of Wildlife Management* 61:102-12.
- Peterjohn, B.G.; Sauer, J.R. 1999. Population status of North American grassland birds from the North American breeding bird survey, 1966-1996. *Studies in Avian Biology* 19:27-44.
- Peterson, N.J. 1983. The effects of fire, litter, and ash on flowering in *Andropogon gerardii*. In: Brewer, R., editor. Proceedings, 8th North American prairie conference. Kalamazoo, MI: Western Michigan University. 21-26.
- Platt, J.R. 1964. Strong inference. *Science* 146:347-353.
- Plissner, J.H.; Haig, S.M. 2000. Status of a broadly distributed endangered species: results and implications of the second international piping plover census. *Canadian Journal of Zoology* 78:128-39.
- Pokorny, M.L. 2002. Plant functional group diversity as a mechanism for invasion resistance [master's thesis]. Bozeman, MT: Montana State University. [Pages unknown].
- Pokorny, M.L.; Sheley, R.L.; Svejcar, T.J.; Engle, R.E. 2004. Plants species diversity in a grassland plant community: evidence for forbs as a critical management consideration. *Western North American Naturalist* 64:219-230.
- Pokorny, M.L.; Sheley, R.L.; Zabinski, C.A.; Engel, R.E.; Svejcar, T.J.; Borkowski, J.J. 2005. Plant functional group diversity as a mechanism for invasion resistance. *Restoration Ecology* 13(3):448-59.
- Pyne, S.J. 1982. *Fire in America: A cultural history of wildland and rural fire*. Princeton, NJ: Princeton University Press.
- . 1986. These conflagrated prairies: a cultural fire history of the grasslands. In: Clambey, G.K.; Pemble, R.H.; editors. *The prairie: past, present, and future*. Proceedings, 9th North American prairie conference. Fargo, ND: Tri-College University Center for Environmental Studies. 121-137.
- Rehm, G.W. 1984. Yield and quality of a warm-season grass mixture treated with N, P, and atrazine. *Agronomy Journal* 76:731-733.
- Reynolds, R.E.; Shaffer, T.L.; Renner, R.W.; Newton, W.E.; Batt, B.D.J. 2001. Impact of the conservation reserve program on duck recruitment in the U.S. Prairie Pothole Region. *Journal of Wildlife Management* 65:765-780.
- Ribic, C.A.; Guzy, M.J.; Sample, D.W. 2009. Grassland use of remnant prairie and conservation reserve program fields in an agricultural landscape in Wisconsin. *The American Midland Naturalist* 161:110-122.
- Ribic, C.A.; Sample, D.W. 2001. Associations of grassland birds with landscape factors in southern Wisconsin. *American Midland Naturalist* 146:105-21.
- Ringelman, James K.; editor. 2005. *Prairie Pothole Joint Venture 2005 implementation plan*. Bismarck, ND: U.S. Department of the Interior, Fish and Wildlife Service. 160 p.
- Robel, R.J.; Briggs, J.N.; Dayton, A.D.; Hulbert, L.C. 1970. Relationships between visual obstruction measurements and weight of grassland vegetation. *Journal of Range Management* 23:295-297.
- Romig, G.P.; Crawford, R.D. 1995. Clay-colored sparrows in North Dakota parasitized brown-headed cowbirds. *Prairie Naturalist* 27:193-205.
- Royer, R.A.; Austin, J.E.; Newton, W.E. 1998. Checklist and "pollard walk" butterfly survey methods on public lands. *American Midland Naturalist* 140:358-71.
- Rumble, M.A.; Flake, L.D. 1983. Management considerations to enhance use of stock ponds by waterfowl broods. *Journal of Range Management* 36:691-4.
- Rumble, M.A.; Sieg, C.H.; Uresk, D.W.; Javersak, J. 1998. *Native woodlands and birds of South Dakota: past and present*. General Technical Report RMRS-RP-8, Fort Collins, CA: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 11p.
- Runge, J.P. 2005. *Spatial population dynamics of Microtus in grazed and ungrazed grasslands*. [Ph.D. dissertation]. Missoula, MT: University of Montana.
- Ryan, M.R.; Root, B.G.; Mayer, P.M. 1993. Status of piping plovers in the Great Plains of North America: a demographic simulation model. *Conservation Biology* 7:581-5.
- Samson, F.; Knopf, F. 1994. *Prairie conservation in North America*. *BioScience* 44:418-21.
- Samson, Fred B.; Knopf, Fritz L.; Ostlie, Wayne R. 1998. *Grasslands*. In: Mac, M.J.; Opler, P.A.; Puckett Haecker, C.E.; Doran, P.D.; editors. *Status and trends of the nation's biological resources*. [Internet]. Version 21JAN2000. Jamestown, ND: Northern Prairie Wildlife Research Center online. <<http://www.npwrc.usgs.gov/resource/2000/grlands/grlands.htm>> 2:437-72.
- Sargeant, A.B. 1972. Red fox spatial characteristics in relation to waterfowl predation. *Journal of Wildlife Management* 36:225-36.
- Sargeant, A.B.; Allen, S.H.; Hastings, J.O. 1987. Spatial relations between sympatric coyotes and red

- foxes in North Dakota. *Journal of Wildlife Management* 51:285–93.
- Sauer, C.O. 1950. Grassland climax, fire and man. *Journal of Range Management* 3:59–69.
- Sauer, J.R.; Hines, J.E.; Fallon, J. 2008. The North American breeding bird survey, results and analysis 1966–2007. Version 15MAY2008. USGS Patuxent Wildlife Research Center, Laurel, MD. <<http://www.mbr-pwrc.usgs.gov/bbs/>> accessed 2010 January 24.
- Schacht, W.; Stubbendieck, J. 1985. Prescribed burning in the loess hill mixed prairie of southern Nebraska. *Journal of Range Management* 38:47–51.
- Schmitz, R.A.; Clark, W.R. 1999. Survival of ring-necked pheasant hens during spring in relation to landscape features. *Journal of Wildlife Management* 63:147–54.
- Schneider, F.E. 1982. A model of prehistoric cultural developments in the James River Valley of North Dakota. *Journal of the North Dakota Archaeological Association* 1:113–133.
- Schranck, B.W. 1972. Waterfowl nest cover and some predation relationships. *Journal of Wildlife Management* 36:182–186.
- Schroeder, R.L.; Holler, J.I.; Taylor, J.P. 2004. Managing national wildlife refuges for historic or non-historic conditions: determining the role of the refuge in the ecosystem. *Natural Resources Journal* 44(4):1183–1210.
- Seastedt, T.R. 1995. Soil systems and nutrient cycles of the North American prairie. In: Joern, A.; Keeler, K.H.; editors. *The changing prairie: North American grasslands*. New York, NY: Oxford University Press. 157–174.
- Sedivec, K.K.; Barker, W.T. Selected North Dakota and Minnesota range plants. Fargo, ND: North Dakota State University.
- Severson, K.E.; Sieg, C.H. 2006. The nature of eastern North Dakota: pre-1880 historical ecology. Fargo, ND: North Dakota State University, North Dakota Institute for Regional Studies. 308 p.
- Shaffer, J.A.; Goldade, C.M.; Dinkins, M.F. Johnson, D.H.; Igl, L.D.; Euliss, B.R. 2003. Brown-headed cowbirds in grasslands: their habitat, hosts, and response to management. *Prairie Naturalist* 35(3):145–186.
- Sheley, R.L.; Half, M. L. 2006. Enhancing native forb establishment and persistence using a rich seed mixture. *Restoration Ecology* 14:627–635.
- Shutler, D.; Mullie, A.; Clark, R.G. 2000. Bird communities of prairie uplands and wetlands in relation to farming practices in Saskatchewan. *Conservation Biology* 14:1441–51.
- Sims, P.I. 1988. Grasslands. In: Barbour, M.G.; Billings, W.D.; editors. *North American terrestrial vegetation*. Cambridge: Cambridge University Press. 266–86.
- Smith, B.J.; Higgins, K.F. 1990. Avian cholera and temporal changes in wetland numbers and densities in Nebraska's Rainwater Basin area. *Wetlands* 10:1–5.
- Smith, M.D.; Knapp, A.K. 1999. Exotic plant species in a C4-dominated grassland: invisibility, disturbance, and community structure. *Oecologia* 120:605–612.
- Snyder, W.D. 1984. Ring-necked pheasant nesting ecology and wheat farming on the high plains. *Journal of Wildlife Management* 48:878–88.
- [SDGFP] South Dakota Game, Fish and Parks. 2010. Facts about chronic wasting disease. [Internet]. Version AUG2010. <<http://gfp.sd.gov/wildlife/diseases/chronic-wasting-disease/cwd-facts.aspx>>
- South Dakota Ornithologists' Union. 1991. *The birds of South Dakota*. Aberdeen, SD: Northern State University Press.
- Sovada, M.A.; Burns, M.J.; Austin, J.E. 2005. Predation of waterfowl in prairie breeding areas. Jamestown, ND: Northern Prairie Wildlife Research Center. 70 p.
- [SHSND] State Historical Society of South Dakota. 1990. The North Dakota comprehensive plan for historic preservation: archeological component. Archeology and Historic Preservation Division, State Historical Society of North Dakota, North Dakota Heritage Center, Bismarck.
- Steuter, A.A.; McPherson, G.R. 1995. Fire as a physical stress. In: Bedunah, D.J.; Sosebee, R.E.; editors. *Wildland plants: physiological ecology and developmental morphology*. 550–79.
- Stewart, Robert E. 1975. Breeding birds of North Dakota. [Internet]. Version 06JUL2000. Fargo, ND: Tri-College Center for Environmental Studies. Jamestown, ND: Northern Prairie Wildlife Research Center. 295 p. <<http://www.npwrc.usgs.gov/resource/birds/bbofnd/biog.htm>>
- Stewart, R.E.; Kantrud, H.A. 1971. Classification of natural ponds and lakes in the glaciated prairie region. Bureau of Sport Fisheries and Wildlife, Resource Publication 92. Washington, DC. [Pages unknown].
- Sugden, L.G.; Beyersbergen, G.W. 1984. Farming intensity on waterfowl breeding grounds in Saskatchewan parklands. *Wildlife Society Bulletin* 12:22–6.
- Svedarsky, D.; Van Amburg, G. 1996. Integrated management of the greater prairie chicken and livestock on the Sheyenne National grassland. Bismarck, ND: North Dakota Game and Fish Department. [Pages unknown].
- Svedarsky, W.D.; Toepfer, J.E.; Westemeier, R.L.; Robel, R.J. 2003. Effects of management practices on grassland birds: greater prairie-chicken. Jamestown, ND: Northern Prairie Wildlife Research Center. 42 p.
- Swanson, G.A.; Duebbert, H.F. 1989. Wetland habitats of waterfowl in the Prairie Pothole region. In: A.

- van der Valk; editor. Northern Prairie Wetlands. Ames, IA: Iowa State University. 228–267.
- Swanson, G.A.; Euliss, N.H.; Hanson, B.; Mushet, D.M. 2003. Dynamics of a prairie pothole wetland complex: implications for wetland management. In: Winter, T.C., editor. Hydrological, chemical, and biological characteristics of a prairie pothole wetland complex under highly variable climate conditions—the Cottonwood Lake Area, East-Central North Dakota. US Geological Survey. Professional Paper 1675. 55–94.
- Tallman, D.; Swanson, D.L.; Palmer, J.S. 2002. Birds of South Dakota (3rd edition). South Dakota Ornithologists' Union. Aberdeen, South Dakota, SD Midstates/Quality Quick Print.
- Tilman, D. 1997. Community invisibility, recruitment limitations, and grassland biodiversity. *Ecology* 78(1):81–92.
- Tilman, D.; Wedin, D.; Knops, J. 1996. Productivity and sustainability influenced by biodiversity in grassland ecosystems. *Nature* 379:718–720.
- Towne, G.; Owensby, C.E. 1984. Long-term effects of annual burning at different dates in ungrazed Kansas tallgrass prairie. *Journal of Range Management* 37:392–397.
- Trammell, M.A.; Butler, J.L. 1995. Effects of exotic plants on native ungulate use of habitat. *Journal of Wildlife Management* 59:808–16.
- Trlica, M.J.; Biondini, M.E. 1990. Soil water dynamics, transpiration, and water losses in a crested wheatgrass and native shortgrass ecosystem. *Plant and Soil* 126: 187–201.
- [DOI] U.S. Department of the Interior. 2009. Order No. 3289: Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources. [Location of publisher unknown]: U.S. Department of the Interior. 4 p.
- U.S. Environmental Protection Agency. 1998. Climate change and South Dakota EPA 236-F-98-007x. Washington, DC: Office of Policy, Planning and Evaluation, Climate and Policy Assessment Division.
- [USFWS] U.S. Fish and Wildlife Service. 1957. Wildlife refuges manual. Fish and Wildlife Service, U.S. Department of the Interior, Washington, D.C.
- . 1990. Interior population of the least tern recovery plan. [Location of publisher unknown]: U.S. Department of the Interior, Fish and Wildlife Service. [Pages unknown].
- . 1994a. Draft revised recovery plan for piping plovers breeding on the Great Lakes and northern Great Plains of the U.S. [Location of publisher unknown]: U.S. Department of the Interior, Fish and Wildlife Service. [Pages unknown].
- . 1994b. Whooping crane recovery plan. [Location of publisher unknown]: U.S. Department of the Interior, Fish and Wildlife Service. [Pages unknown].
- . 1996. Western prairie fringed orchid (*Platanthera praeclara*) recovery plan. [Location of publisher unknown]: U.S. Department of the Interior, Fish and Wildlife Service. 101 p.
- . 1999. Fulfilling the promise—the national wildlife refuge system: visions for wildlife, habitat, people, and leadership. Arlington, VA: U.S. Department of the Interior, Fish and Wildlife Service.
- . 2001a. Policy on maintaining the biological integrity, diversity, and environmental health of the national wildlife refuge system. U.S. Fish and Wildlife Service Manual, 601 FW3. 66 Fed. Reg. 3817.
- . 2001b. 2000–2001 contingency plan: federal-state cooperative protection of whooping cranes [unpublished report]. On file at U.S. Fish and Wildlife Service in Albuquerque, NM. 42 p.
- . 2002a. Status assessment and conservation guidelines, Dakota skipper. Arlington, VA: U.S. Department of the Interior, Fish and Wildlife Service. [Pages unknown].
- . Map of known Dakota skipper locations in South Dakota by County. <<http://www.fws.gov/southdakotafieldoffice/images/dakota%20skipper%20oct23%202002%20general.jpg>>
- . 2004a. Director's Order 172, "Responsibilities of Federal Agencies to Protect Migratory Birds". U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. 15p.
- . 2004b. Chronic wasting disease plan for U.S. Fish and Wildlife Service lands in the Dakotas [unpublished report]. [Location where on file unknown]. 17 p.
- . 2006. Wildlife disease contingency plan. U.S. Department of the Interior, Fish and Wildlife Service, National Wildlife Refuge System, South Dakota, USA.
- . 2008a. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 p. [Online version available at <<http://www.fws.gov/migratorybirds/>>]
- . 2008b. Identifying resources of concern and management priorities for a refuge: a handbook. U.S. Department of the Interior, Fish and Wildlife Service, National Wildlife Refuge System. 61 p.
- . 2010. Rising to the Urgent Challenge: Strategic Plan for Responding to Accelerating Climate Change. United States Department of Interior, Fish and Wildlife Service, Arlington, Virginia. 36p. [Online version available at <<http://www.fws.gov/home/climatechange/pdf/CCStrategicPlan.pdf>>]
- [USGS] U.S. Geological Survey. 2006. Ecoregions of North Dakota and South Dakota. [Internet]. Jamestown, ND: Northern Prairie Wildlife Research Center online. <<http://www.npwrc.usgs.gov/resource/habitat/ndsdeco/ecotext.htm>> [date accessed unknown.]

- . 2007. Wetlands of North Dakota. [Internet]. Water Science Center. <<http://nd.water.usgs.gov/wetlands/index.html>> accessed March 2007.
- van der Valk, A.G. 2005. Water-level fluctuations in North American prairie wetlands. *Hydrobiologia* 539:171–188.
- van der Valk, A.G.; Davis, C.B. 1978. The role of seed banks in the vegetation dynamics of prairie glacial marshes. *Ecology* 59: 322–335.
- Vermeire, L.T.; Mitchell, R.B.; Fuhlendore, S.D.; Gillen, R.L. 2004. Patch burning effects on grazing distribution. *Journal of Range Management* 57:248–252.
- Vickery, P.D.; Herkert, J.R. 2001. Recent advances in grassland bird research: where do we go from here? *The Auk* 118:11–15.
- Vinton, M.A.; Goergen, E.M. 2006. Plant-soil feedbacks contribute to the persistence of *Bromus inermis* in tallgrass prairie. *Ecosystems* 9:967–976.
- Vogl, R.J. 1974. Effect of fire on grasslands. In: Kozlowski, T.T.; Ahlgren, C.E.; editors. *Fire and ecosystems*. New York: Academic Press. [Pages unknown].
- Warren, J.M.; Rotella, J.; Thompson, J.E. 2008. Contrasting effects of cattle grazing intensity on upland-nesting duck production at nest and field scales in the Aspen Parkland, Canada. *Avian Conservation and Ecology* 3(2):6. <<http://www.ace-eco.org/vol3/iss2/art6/>>.
- Watson, A.K. 1985. Introduction: the leafy spurge problem. In: Watson, A.K.; editor. *Leafy spurge*. Weed Science Society of America Monograph 3:1–6.
- Weaver, J.E.; Albertson, F.W. 1936. Effects of the great drought on the prairies of Iowa, Nebraska and Kansas. *Ecology* 17(4):567–639.
- Webb, S.D. 1983. The rise and the fall of the late Miocene ungulate fauna in North America. In: Nitecki, H.H.; editor. *Coevolution*. Chicago, IL: University Chicago Press. 267–306.
- Weller, M.W. 1988. Issues and approaches in assessing cumulative impacts on waterbird habitat in wetlands. *Environmental Management* 12:695–701.
- . 1994. *Freshwater marshes*. 3rd ed. University of Minnesota Press.
- . 1999. *Wetland birds: habitat resources and conservation implications*. Cambridge, MA: Cambridge University Press.
- Weller, M.W.; Fredrickson, L.H. 1974. Avian ecology of a managed glacial marsh. *Living Bird* 12: 269–291.
- Weller, M.W.; Spatcher, C.S. 1965. Role of habitat in the distribution and abundance of marsh birds. Department of Zoology and Entomology Special Report Number 43. Ames, IA: Iowa State University, Agricultural and Home Economics Experiment Station.
- Wells, P.V. 1970. Postglacial vegetational history of the Great Plains. *Science* 167:1574–1575.
- Wilcove, D.S.; Rothstein, D.; Dubow, J.; Phillips, A.; Losos, E. 1998. Quantifying threats to imperiled species in the United States. *BioScience* 48:607–615.
- Willson, G.D. and J. Stubbendieck. 2000. A provisional model for smooth brome management in degraded tallgrass prairie. *Ecological Restoration* 18:34–38.
- Wilson, E.O. 1992. *The diversity of life*. New York: W.W. Norton & Co. 432 p.
- Wilson, S.D. 2002. Prairies. In: Davy, A.J.; Perrow, M.R.; editors. *Handbook of ecological restoration*. Cambridge, MA: Cambridge University Press. 443–465.
- Wilson, S.D.; Belcher, J.W. 1989. Plant and bird communities of native prairie and introduced Eurasian vegetation in Manitoba, Canada. *Conservation Biology* 3(1):39–44.
- Winham, R.P.; Hannus, L.A. 1989. South Dakota State plan for archeological resources: introduction and overview to study units and archeological management regions. Archeology Laboratory, Augustana College, Sioux Falls, South Dakota. Submitted to the South Dakota Archeological Research Center, Rapid City.
- Winter, M.; Johnson, D.H.; Faaborg, J. 1999. Patterns of area sensitivity in grassland nesting birds. *Conservation Biology* 13:1424–36.
- . 2000. Evidence for edge effects on multiple levels: artificial nests, natural nests, and distribution of nest predators in Missouri tallgrass prairie fragments. *Condor* 102:256–66.
- Winter, T.C.; Rosenberry, D.O. 1995. The interaction of groundwater with prairie potholes in the Cottonwood Lake area, east-central North Dakota, 1979–1990. *Journal of Hydrology* 15:193–221.
- Wood, W.R.; editor. 1998. *Archaeology on the Great Plains*. University Press of Kansas, Lawrence.

