Washita and Optima
National Wildlife Refuges

DRAFT
Comprehensive Conservation Plan
And
Environmental Assessment

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Comprehensive Conservation Plans provide long term guidance for management decisions; set forth goals, objectives, and strategies needed to accomplish refuge purposes; and identify the Fish and Wildlife Service's best estimate of future needs. These plans detail program planning levels that are sometimes substantially above current budget allocations and, as such, are primarily for Service strategic planning and program prioritization purposes. The plans do not constitute a commitment for staffing increases, operational and maintenance budget increases, or funding for future land acquisition.

EXECUTIVE SUMMARY

The Comprehensive Conservation Plan (CCP) for the Washita/Optima National Wildlife Refuge (NWR) Complex will serve as a management tool for refuge staff and its partners in the preservation and restoration of the ecosystem's natural resources. The CCP will guide management decisions over the next 15 years and set forth strategies for achieving refuge goals and objectives within that time frame.

The goals of the CCP have incorporated components to fulfill the U.S. Fish and Wildlife Service's (Service) mission for the National Wildlife Refuge System (Refuge System), as well as specific elements to fulfill the vision or mission of the Washita/Optima NWR Complex. Specific goals from the ecosystem plan of the Arkansas/Red Rivers Ecosystem have been incorporated where applicable. The results of the planning process are best summarized by the following Refuge Complex goals that are supported by measurable objectives and specific implementation strategies. Those goals are:

Goal 1: Attract Waterfowl (Washita): the refuge will continue to attract and retain large numbers of migrating and wintering waterfowl and shorebirds through enhancing refuge wetlands, moist soil units, and farming for wildlife program.

Enhance Forage Resources for Migratory Birds (Optima): the refuge will continue to provide forage resources for migratory birds through an improved farming for wildlife program.

Goal 2: Restore Native Plant Communities: the refuges will work to restore degraded or altered natural habitats through control of exotic species and reestablishment of native plant communities.

Goal 3: Mitigate Highway Impacts: the refuges will investigate the effects of existing highways on habitats and wildlife populations. Where feasible, the refuges will mitigate these effects.

Goal 4: Cultural Resources: identify, protect, and interpret the historic and prehistoric cultural resources of the refuges for the benefit of present and future generations.

Goal 5: Wildlife Dependent Recreational Uses: the refuges will increase public awareness and appreciation of refuge wildlife resources by improving outreach, interpretive materials and recreational facilities.

Goal 6: Partnerships and Interagency Coordination: the refuges will strive to maximize their regional impact on conservation beyond their boundaries through formal and informal agreements with tribal, state, and local governments, and private agencies and institutions with jurisdiction.

Goal 7: Administrative, Budgetary and Staff Resources: the refuges will develop program support sufficient to provide the necessary staffing, facilitation,

equipment, and operational funding to accomplish their goals and support the mission of the National Wildlife Refuge System.

Objectives will guide the refuge staff in a consistent direction toward the accomplishment of each goal. Per the directives of the Fish and Wildlife Service's Refuge Planning Policy, each objective should be specific, measurable, achievable, results oriented, and have an implementation schedule. The major objectives include the following:

- Continue to manage at least 84 acres of moist soil units to provide food and habitat for wintering and migrating waterfowl. Implement measures to increase effectiveness and reduce maintenance of moist soil areas (Washita NWR).

- Within two years of plan adoption, survey refuge for potential additional moist soil area development (Washita NWR).

- Within four years of plan adoption, complete investigations of the potential to enhance wetlands along the shallows of Foss Reservoir and the Washita River (Washita NWR).

- Continue to cultivate forage for waterfowl on approximately 2,000 acres (Washita NWR).

- Within seven years of plan adoption, develop protocols for evaluation of farming for wildlife on the refuge and implement surveys (Optima).

- Within twelve years of plan adoption, begin to implement any modifications of the refuge farming program suggested by the surveys proposed above (Optima).

- Within two years of plan adoption, develop an Integrated Pest Management (IPM) plan for refuge farmland suitable for implementation by co-op farmers and refuge staff engaged in force account farming (both refuges).

- Restore an average of 35 acres of degraded grasslands to approximate native short-grass and mixed-grass prairie conditions (both refuges).

- Continue to offer hunts to stabilize or reduce the size of the refuge deer herd (Washita NWR).

- Within seven years of plan adoption, develop plans for measures to limit deer/vehicle collisions on State Highway 33 (Washita NWR).

- Within eight years of plan adoption, determine the level of impact to small vertebrates caused by direct mortality on State Highway 33 and habitat fragmentation by the highway (Washita NWR).

- Within fivee years of plan adoption, develop and begin implementing a restoration plan for riparian areas currently dominated by salt cedar (*Tamarix ramosissima*) (Optima NWR).

- Within five years of plan adoption, conduct a baseline survey of refuge habitat and wildlife resources (both refuges).

- Within six years of plan adoption, design and implement a survey of wildlife mortality from Highway 3/412 (Optima NWR).

- Within ten years of plan adoption, implement mitigation measures for effects identified under the previous objective (Optima NWR).

- Continue to protect cultural and historic resources of both the refuges.

- Within ten years of plan adoption, complete a cultural resources overview and assessment of the refuge (Washita NWR).

- Within five years of plan adoption, develop an environmental education plan for area schools and provide educational resource materials suitable for use in area schools (both refuges).

- Continue to develop and install signs or other appropriate media to interpret Washita NWR's natural resources, history and management programs.

- Within seven years of plan adoption, develop a network of primitive hiking trails through Washita NWR.

- Contingent on completion of the Great Plains Trail by the Oklahoma Wildlife and Prairie Heritage Alliance, develop complementary refuge visitor services (Optima NWR).

- Continue to encourage use of all refuge hunting blinds in areas not generally closed to the public by photographers and wildlife watchers during seasons closed to hunting (Washita NWR).

- Within seven years of plan adoption, develop and implement an outreach strategy in local media, on the internet and in Oklahoma tourism publications informing potential visitors of the Washita NWR's recreation opportunities.

- Continue to offer a variety of hunting opportunities (both refuges).

- Continue to coordinate habitat management programs with the Oklahoma Department of Wildlife Conservation (both refuges).

- Within five years of plan adoption, develop an outreach plan to Native American tribes with potential interests in the region's wildlife and natural resources (both refuges).

- Within three years of plan adoption, propose that Optima NWR become a research host for biological field research by partner agencies and organizations.

- Within three years of plan adoption, develop an outreach plan to neighboring communities and residents (both refuges).

- Within ten years of plan adoption, fund and hire three additional full time positions at Washita NWR.

- Within ten years of plan adoption, fund, design and construct a visitor contact station (Washita NWR).

- Concurrent with design and construction of new visitor contact station, assess the current administrative office for any needed upgrades (Washita NWR).

- Within three years of plan adoption, evaluate each building in the refuge administrative area for modernization or replacement (Optima NWR).

- Within six years of plan adoption, complete review of refuge equipment and its suitability to implement management changes identified under Goal 2, above (Optima NWR).

The goals and objectives of this plan are the management framework providing direction and continuity in refuge programs over a 15 year period. Strategies or activities are suggested to progressively work toward achieving the specific objectives. The strategies may be modified in the future as a result of a broader understanding or knowledge of an issue.

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LIST OF ACRONYMS AND ABBREVIATONS USED

AM	Annual Maintenance
AOU	American Ornithologists' Union
BOR	Bureau of Reclamation
CCP	Comprehensive Conservation Plan
Corps	United States Army Corps of Engineers
ESA	Endangered Species Act of 1973
FRMCD	Foss Reservoir Master Conservancy District
IPM	Integrated Pest Management
MAIN	fixed cost refuge funds
MMS	Maintenance Management System
msl	mean sea level
MOU	Memorandum of Understanding
NABCI	North American Bird Conservation Initiative
NEPA	National Environmental Policy Act of 1969
NGO	non-governmental organization
NRCS	Natural Resources Conservation Service
NWR	National Wildlife Refuge
ODOT	Oklahoma Department of Transportation
ODWC	Oklahoma Department of Wildlife Conservation
O&M	Operations and Maintenance
PFT	permanent full time employee
PIF	Partners in Flight
RAPP	Refuge Annual Performance Planning
Refuge System	National Wildlife Refuge System
RMCI	Research Management Consultants, Inc.
RNA	Research Natural Area
RONS	Refuge Operating Needs System
RWP	Refuge Workforce Plan
SCS	Soil Conservation Service
Service	United States Fish and Wildlife Service
SWOSU	Southwestern Oklahoma State University
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WCS	water control structures
WMA	Wildlife Management Area

VISION

Washita

Washita National Wildlife Refuge will continue to be an important wintering and migration stopover area for waterfowl and shorebirds in the central flyway. The refuge will experiment and consult with other agencies to increase the effectiveness and efficiency of moist soil units, refuge farming and other waterfowl food production. Due to its location at the eastern edge of the range of many western species and at the western edge of the range of many eastern species, the refuge's varied habitats will support a large diversity of songbirds. Remnant areas of native mixed-grass prairie on the refuge will be preserved, and suitable areas restored to mixed-grass prairie, as windows to western Oklahoma's natural heritage.

The refuge will reach out to neighbors, visitors and communities throughout the region with enhanced interpretive and educational programs. Refuge education programs will grow. Both school visits to the refuge and educational visits to area classrooms by refuge staff will enhance area children's knowledge of, and concern for, wildlife conservation. The refuge will continue to develop new interpretive materials, ranging from enhanced brochures to additional interpretive signage along refuge visitor trails and at overlooks. Outreach programs developed at the refuge and at the regional office will raise the profile of the refuge in area communities.

Hunting, fishing, and opportunities to view or photograph wildlife will continue to bring people to the refuge. Hunting programs will be expanded to provide additional educational and recreational opportunities focusing on introducing this traditional wildlife use to area youth, while providing an effective tool for managing the refuge wildlife populations.

Optima

Optima National Wildlife Refuge will provide a protected area of mixed-grass prairie and riparian habitat in the Oklahoma panhandle. The refuge is unlikely to have full-time, onsite staff at any time during the life of this plan. Management of the refuge will be based out of Washita National Wildlife Refuge, some 170 miles away. To maximize management effectiveness from this distance, the Fish and Wildlife Service will seek partnerships and volunteer labor to accomplish modest conservation projects such as planting eastern cottonwood trees in the Coldwater Creek riparian area, controlling exotic species such as salt cedar, and monitoring bird populations. The refuge will continue to be highly valued by a small cadre of upland gamebird and deer hunters.

Upon completion of the anticipated Great Plains Trail of Oklahoma, Optima National Wildlife Refuge will experience increased visits by local and out-of-state birders and other outdoor enthusiasts.

1.0 INTRODUCTION AND BACKGROUND

This Comprehensive Conservation Plan (CCP) will guide the development and management of the Washita and Optima National Wildlife Refuges (NWR) for the next 15 years (2007 through 2022). The goals and objectives contained in this document reflect a natural management theme and focus on issues pertaining to the refuges. The refuges will manage for ecological integrity with emphasis on the protection and enhancement of habitat for waterfowl and shorebirds at Washita and migratory birds at Optima. The purpose of the actions in this plan is to facilitate achievement of the refuges' goals and purposes for which the Washita and Optima NWRs were established. Figure 1 depicts the locations of Washita and Optima NWRs in the state of Oklahoma.

Figure 1. Locations of Washita and Optima NWRs in Oklahoma

1.1 Purpose and Need for Action

The purpose of comprehensive management planning is to provide long-range guidance for the management of National Wildlife Refuges. As such, all lands of the Refuge System are to be managed in accordance with an approved CCP that will guide management decisions and set forth strategies for achieving refuge purposes. The National Wildlife Refuge System Improvement Act of 1997 requires all refuges to have a CCP and provides the following legislative mandates to guide the development of the CCP:

- wildlife has first priority in the management of refuges;
- wildlife-dependent recreation including hunting, fishing, wildlife observation, wildlife photography, environmental education and environmental interpretation are the priority public uses of the Refuge System, and should be facilitated, as feasible, when compatible with the refuge purpose; and
- other uses have lower priority in the Refuge System and are only allowed if compatible with the refuge purpose, not in conflict with any of the priority uses, and determined to be appropriate.

This CCP provides management direction to present and future refuge managers for the next 15 years. It describes all management activities that occur on the refuge and provides management goals, measurable objectives, and management actions or strategies designed to enhance and protect existing habitats and restore degraded habitats for the benefit of wildlife including endangered species. The goals and objectives will guide management toward the refuge vision or the ecologically desirable outcome for the Washita/Optima NWR Complex.

The Service's goals for the Comprehensive Conservation Planning process include:

- provide a clear statement of desired future conditions for each refuge or planning unit;
- provide a forum for the public to comment on the type, extent, and compatibility of uses on refuges – provide refuge neighbors and visitors with a clear understanding of the reasons for management actions on and around the refuge;
- ensure that each refuge is managed to fulfill the mission of the Refuge System as well as the specific purposes for which it was established;
- ensure public involvement in refuge management decisions by providing a process for effective coordination, interaction, and cooperation with affected parties, including federal agencies, state conservation agencies, Native American Tribes, adjacent landowners, and interested members of the public;
- encourage refuge planning that considers an ecosystem approach;
- demonstrate support for management decisions and their rationale by professional judgment, biological initiatives, and public involvement;
- provide long-term continuity in refuge management; and
- provide a uniform basis for budget requests and operational, maintenance, and capital improvement programs.

1.2 Refuge History

1.2.1 Washita NWR

The early history of Oklahoma focuses on its status as "Indian Territory" created by an Act of Congress in 1825. As Indian Territory, this land became a settlement area for Native Americans displaced from other regions, such as the Cherokee Nation, relocated from the Carolinas to eastern Indian Territory. The Southern Cheyenne and Arapaho, who had been living nomadically in western Nebraska and eastern Colorado, were assigned to a reservation in northwestern Oklahoma in 1869. In 1887 the Dawes Severalty Act, or Allotment Act, authorized survey of Indian reservation lands in the west. After survey, tribal lands previously held in common were allotted to individual Native Americans in allotments of 80 to 160 acres each.

In 1889, Congress passed the Indian Appropriations Bill, which proclaimed that any "Indian lands" not allotted to an individual Native American reverted to the public domain. This laid the foundation for the Oklahoma land rush. Under the Homestead Act of 1862 settlers could claim ownership of 160 acres, a quarter section, of public domain land by paying a filing fee and "proving it up," that is, making improvements to the land and residing on it for five years. The land run that opened the western portion of the state occurred April 19, 1892, a bit more than three years after the initial Oklahoma Land Rush of 1889. The opening of the Cheyenne-Arapaho Reservation was not widely publicized, and as a result, not many homesteaders descended on the area for the official opening. The main surge of settlement occurred between 1900 and 1902.

By Oklahoma's statehood in 1907, the majority of the quarter sections contained a homesite and a family. During the middle and late years of the Twentieth Century,

however, a major portion of the rural population left the area, prompted by drought and better economic opportunities within larger cities. Farms can now be more accurately tallied by the section (square mile or 640 acres) rather than the quarter.

When this area was first settled it was a rolling prairie of bluestem, grama, and buffalo grass. The more fertile sites were transformed into cropland until more than half the land was cultivated. During the prolonged drought of the 1930s, disturbed grasslands were very susceptible to wind erosion. On the day after "Black Sunday," April 14, 1935, when the worst dust storm struck Oklahoma, a reporter referred to the area as "the dust bowl of the continent." The name stuck and has been used ever since to describe the result of the tragic combination of land degradation and weather extremes in the southern Great Plains. Seventy years later, many experts still consider America's Dust Bowl an example of how misuse and/or overuse of the land, aggravated by drought, can turn productive soil into dust -- a process today called desertification (U.S. Department of State, 2004). Largely in response to the dustbowl, the federal Soil Conservation Service (SCS), now called the Natural Resources Conservation Service (NRCS), was established, and soil conservation techniques such as crop rotation, planting steeper sites in grass and contour plowing were adopted (Jackson, 1980). Many of the highly eroded sites are no longer tilled and have been restored to prairie. Where old homesteads have been abandoned; the trees planted as wind breaks after the Dust Bowl still mark their former locations (USFWS, 1993).

A 1943 report on the Washita River Basin compiled by the Natural Resources Planning Board, a federal board that evaluated land and water resources in cooperation with states and municipalities from 1937 to 1943, recommended a series of dams and reservoirs to provide flood control, irrigation water, municipal water supply, and industrial water, with additional benefits of sediment control, recreation and fish and wildlife conservation. The Foss Dam and Reservoir project was authorized by Congress in 1956 and built between 1958 and 1961. Washita NWR was established in 1961 under the Fish and Wildlife Conservation Act as a management overlay on Bureau of Reclamation (BOR) lands and waters of Foss Reservoir.

Refuge Purpose (Washita NWR) - Washita NWR was established under the Fish and Wildlife Coordination Act. This 1934 act, as amended, requires that whenever the waters or channel of a body of water are modified by a department or agency of the United States, the department or agency first shall consult with the U.S. Fish and Wildlife Service and with the head of the agency exercising administration over the wildlife resources of the state where construction will occur, with a view to the conservation of wildlife resources. The Act provides that land, water and interests may be acquired by federal construction agencies for wildlife conservation and development (16 U.S.C. 661-667e). More than 99 percent of the 8,075 acre refuge was created on April 15, 1961 when the BOR transferred management of wildlife and habitats on 8,060 acres of Foss Reservoir and its surrounding uplands to the Fish and Wildlife Service for conservation of its wildlife resource (defined in the Fish and Wildlife Coordination Act as birds, fish, mammals and all other classes of wild animals and all types of aquatic and land vegetation upon which wildlife is dependent [16 U.S.C. 666b]). The Act recognizes the importance of wildlife resource to the nation, and establishes the process of creating NWRs on lands affected by federal projects altering a

stream, river or other body of water, in order to assure that the wildlife resource of the lands is conserved and protected from damage or loss.

Washita NWR has been managed to provide habitat and food for migrating and wintering populations of geese and ducks in the Central Flyway, contributing to conservation of waterfowl resources. The refuge has also been managed to provide a diversity of habitats for a wide range of migratory species, including bald eagle and whooping crane (federally listed as threatened and endangered species), neotropical migratory birds (i. e., birds that breed in Canada or the United States during our summer, and spend our winter in Mexico, Central America, South America or the Caribbean Islands), and shorebirds. Deer, coyote, bobcat, badger, opossum, and other resident wildlife species thrive on the refuge as well. Refuge records show that the diversity and density of native wildlife occurring on the refuge has increased greatly since refuge establishment. Visitors from around the world come to observe the varied and abundant wildlife of western Oklahoma at Washita NWR.

1.2.2 Optima NWR

Optima NWR is located near the center of the Oklahoma "Panhandle," a slender western projection of the state between Texas to the south and Kansas and Colorado to the north. This area of Oklahoma was created by two historical events. When the Territory of Kansas was created in 1854, its southern boundary was set at the 38th Parallel. When Texas, a slave state, came into the Union in 1845, it would not extend its sovereignty over any territory north of 36 degree 30' north latitude because such territory would be free -- as specified by the Missouri Compromise. This left a narrow strip of land 34 miles wide between Kansas and Texas, extending from the 100th Meridian on the east to the 103rd Meridian on the west, a total of 168 miles in length. At the eastern end of the area was the Cherokee Strip in Indian Territory and at the western end was the Territory of New Mexico. As the area was claimed by no state, it soon became known as "No Man's Land". With no state or territorial jurisdiction, the area lacked civil authority and became a preferred hideout for outlaws including the Cole and Dalton gangs. When homesteaders began settling the area in the mid 1880s they expressed interest in organizing local government and proposed new status for the area as Cimarron Territory. In 1890 the Panhandle was attached to Oklahoma Territory, establishing the current configuration. One of the earliest towns in the Panhandle was Old Hardesty, founded in 1885. This town was less than a mile northeast of the future refuge. The town was moved to its present location south of the refuge in 1901. This was the same year that the railroad tracks were extended from Liberal, Kansas to Texas and the town of Guymon was founded.

A reservoir project for Texas County was first proposed in 1929. In 1936 the 74th Congress, under the Flood Control Act of 1936, authorized a dam to be constructed on the North Canadian River. Because of economic demands during the depression years, the Second World War, and then the Korean Conflict, it was not until 1962 that a report of restudy was completed. That same year a biological reconnaissance of the reservoir project site was conducted. Originally a refuge was proposed to cover the entire reservoir project. The proposed refuge was reduced in size, due to anticipated restrictions on recreation in the proposed reservoir, to its current configuration along the Coldwater Creek area. When funding was provided for initial construction in 1965, this project held the dubious distinction of being the oldest uncompleted approved reservoir project in the United

States. Drastic changes in hydrology occurred between the time funding was approved and the date the project was completed. Water flow in the North Canadian River dwindled to a trickle and groundwater levels plummeted due largely to the increased use of irrigation wells. Outlet gates on Optima Dam, located one-half mile downstream from the confluence of the North Canadian (Beaver) River and Coldwater Creek, were closed in 1978. The reservoir's impoundment rate has never reached projected figures. Current lake levels are about the same as when the gates were closed (USFWS, 2001).

Refuge Purpose (Optima NWR) – Optima NWR was established in 1975 under provisions of the Fish and Wildlife Coordination Act, by agreement between the Department of the Interior and the U.S. Army Corps of Engineers (Corps). A discussion of the Fish and Wildlife Coordination Act is provided above under the Washita NWR refuge purpose. While the original intent of the refuge was provision of wintering and resting habitat for migratory waterfowl of the Central Flyway, the refuge provides little for migratory waterfowl due to lower than anticipated water impoundment rates.

Optima NWR is currently managed for resident wildlife and migratory birds, as the lack of water has reduced the potential for waterfowl management. The refuge provides an island of prime habitat for resident species including white-tailed deer, coyote, Rio Grande turkey, and scaled quail.

2.0 PLANNING PERSPECTIVES, CONSIDERATIONS, AND ISSUES

Each National Wildlife Refuge is one segment of a multifaceted system within a widespread and highly complex organization. The directives, policies, and regulations of the Service and the Refuge System, as well as the purposes for which the Washita and Optima NWR were established, have been incorporated into this CCP to provide consistent guidance to each refuge for long-range management decisions.

2.1 The Service and the National Wildlife Refuge System

The mission of the Service is to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. The Service's major responsibilities are for migratory birds, endangered species, certain marine mammals, and freshwater and anadromous fish. One of the programs the Service established to meet its responsibilities is the National Wildlife Refuge System.

The mission of the National Wildlife Refuge System, as stated in the National Wildlife Refuge System Improvement Act of 1997, 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. Established in 1903 by President Theodore Roosevelt, the Refuge System now includes more than 540 Refuges and 38 Wetland Management Districts in all 50 states and several U.S. territories, occupying more than 96 million acres of public lands. National Wildlife Refuges host a tremendous variety of plants and animals supported by a variety of habitats from arctic tundra and prairie grasslands to subtropical estuaries. Most National Wildlife Refuges are strategically located along major bird migration corridors, ensuring that migrating birds have rest stops on their annual migrations. Many refuges play an integral part in the protection and survival of plant and animal species listed as threatened or endangered.

Resource management programs on refuges include water, grassland, forest, natural area, and cropland management; historical/archaeological resource management; and wildlife law enforcement activities. National Wildlife Refuges are extensively used for biological research to benefit wildlife and to improve understanding of our environment. Scientific programs of wildlife management, wetlands management, forestry, agriculture, and soil conservation are combined for the enhancement and management of wildlife populations. In addition to protecting the nation's natural resources, National Wildlife Refuges offer the public a wide variety of recreational and educational opportunities through hunting, fishing, wildlife observation, wildlife photography, environmental education, and environmental interpretation, which attract millions of visitors each year.

2.2 The Ecosystem Approach to Management

The Service has adopted an ecosystem approach to environmental management. This approach recognizes that it is not feasible to consider conservation of a single site, species or habitat without considering all the biological and non-biological components that act upon it. The ecosystem approach is defined as "protecting or restoring the natural

function, structure, and species composition of an ecosystem while recognizing that all components are interrelated" (USFWS, 1999).

The ecosystem approach to management includes preservation of the natural ecological integrity, ecosystem health, and sustainable levels of economic and recreational activity. This approach emphasizes the identification of goals that represent resource priorities on which all parts of the Service will collectively focus their efforts. These cross program partnerships within the Service and partnerships with outside entities assist in the identification of common resource goals, and contribute to the accomplishment of these goals in an effective and timely manner.

The Service has defined 53 ecosystems within the United States, based primarily on watershed boundaries. In order to implement the ecosystem approach, the Service has established ecosystem teams consisting of members representing the various field stations and programs within the Service in any given area. These teams enable the Service to present a more unified approach to issues affecting stations. Ecosystem teams work closely with traditional partners and endeavor to expand partnerships with other individuals and organizations. Each team has developed an ecosystem plan with input from its partners. Ecosystem plans are used to implement collaborative projects across Service programs and with partners.

2.3 The Arkansas/Red Rivers Ecosystem

The Washita/Optima NWR Complex is part of the Arkansas/Red Rivers Ecosystem (see Figure 2). This ecosystem contains approximately 245,000 square miles and extends from the Rocky Mountains to the bayous of Louisiana. It contains all of Oklahoma and parts of seven other states. Elevations within the Arkansas/Red Rivers Ecosystem range from over 14,000 feet above mean sea level (msl) to less than 300 feet msl along the Red River in Louisiana. Because of the diversity in land forms, soils, average annual precipitation, and other factors, the Arkansas/Red Rivers Ecosystem supports the greatest diversity of fish and wildlife resources of any Service ecosystem nationwide (USFWS, 1996).

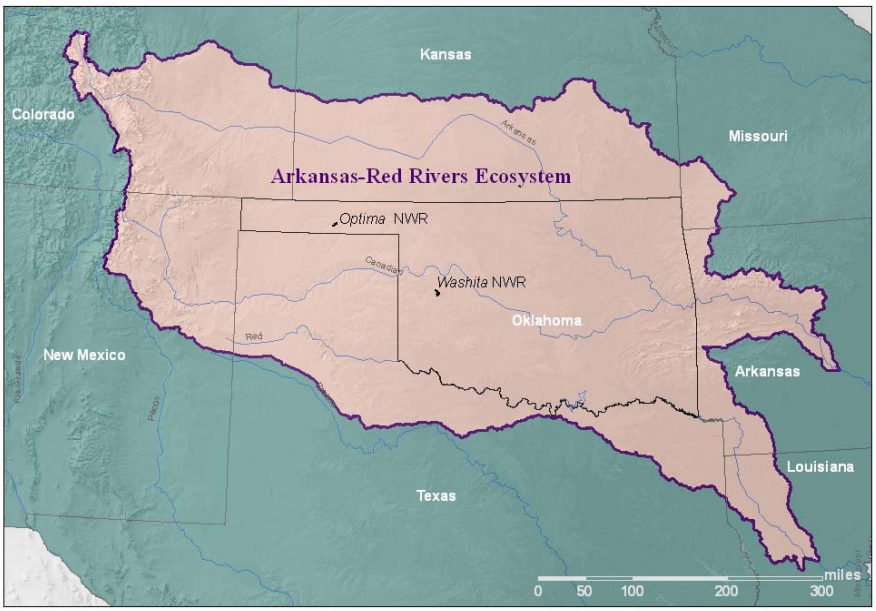

Figure 2. Arkansas/Red Rivers Ecosystem

2.3.1 Arkansas/Red Rivers Ecosystem Objectives

The Service has developed a set of conservation objectives for the Arkansas/Red Rivers Ecosystem. Those that can be addressed by management actions at the Washita or Optima NWRs are listed below:

Water Conservation

Objective 1: Water Quantity Maintenance and Improvement

With partners, and under the constraints of state primacy in matters concerning water allocations, the Service will seek methods to facilitate the conservation of water resources for the management of important fish and wildlife species and habitats, with emphasis on areas downstream of federal water management facilities. Specific areas of concern include in-stream flows, springs, caves, and groundwater and alluvial aquifers.

Objective 2: Water Quality Maintenance and Improvement

With partners and stakeholders, assure that federal and state water quality standards are established and applied in a manner that protects and enhances all aquatic resources.

Species and Habitats

Objective 1: Focus Species Conservation and Restoration

The Arkansas River and its tributaries drain portions of seven states. As a result of the large area contained within the ecosystem, an enormous number of species occupy its diverse habitats. Identified focus species groups include migratory birds, federally listed, proposed, candidate, and species of concern, as well as interjurisdictional fisheries, and non-native species. Some non-native species are perceived as beneficial and desired while others are considered harmful. This objective seeks to conserve, restore, or enhance the habitats upon which these focus species groups depend.

Objective 2: Conserve and Restore Focus Habitats

The Arkansas/Red Rivers Ecosystem contains a tremendous variety of important habitats. Many are under threat due to human alterations and developments such as urban and agricultural expansions, forestry practices, and cave exploration and development. Habitats of significant importance which are under threat include wetlands, streams (including big rivers), floodplain forests (including bottomland hardwoods), native grasslands, upland forests, and cave systems.

Quality of Human Life

Objective 1: Increase Public Outreach Efforts Relative to Service Programs

Conservation of our wildlife heritage can only be accomplished by increasing public knowledge of the related problems and opportunities through environmental education, exhibits, pamphlets, interpretation, and other means.

Objective 2: Improve Outdoor Recreational Opportunities

There is an increased demand for outdoor recreational activities with the expanding human population in the Arkansas/Red Rivers Ecosystem. Popular activities include bird watching, fishing, hiking, and hunting, among others.

2.3.2 Summary of Challenges within Arkansas/Red Rivers Ecosystem

The ecosystem supports plant and animal communities adapted to the diverse and unique habitats within the region. Human habitat modifications have resulted in the reduction, and in some areas, extirpation, of native plants and animals. Alteration of natural river flow regimes through the construction of dams for consumptive uses, flood control, and controlled releases have further altered habitats and impacted native aquatic communities. Land use practices over the past century, primarily farming and ranching, have significantly altered surface soils and the vegetation of the area.

Complex resource management issues are associated with this ecosystem. A diversity of human cultures competing for limited access to water rights and growing resource demands have depleted, and at times contaminated, ground and surface water. Impacts from previous water and land management practices for agricultural needs have seriously altered the Arkansas/Red Rivers Ecosystem by reducing native habitats and species diversity. Impacts from oil and gas development, mining, and urbanization further increased the need for more responsible use of land and water resources that support the remaining native communities.

The proposed management priorities for the Arkansas/Red Rivers Ecosystem focus on trust resources, including traditional roles such as recreational opportunities and more recent directions regarding biological diversity and conservation issues. The refuge staff and the Service are integral to the implementation of the Arkansas/Red Rivers Ecosystem Plan.

2.4. Coordination with Oklahoma Department of Wildlife Conservation (ODWC)

The National Wildlife Refuge System Improvement Act amendments of 1997 require that the Service consult and coordinate with state fish and wildlife agencies while developing CCPs. Throughout the development of this DCCP, ODWC staff has been consulted and provided advance copies of preliminary texts for review and comment. ODWC completed the *Oklahoma Comprehensive Wildlife Conservation Strategy* in 2005 (see discussion below in Section 2.6). To the greatest extent practicable the objectives and strategies of

this DCCP, proposed in Chapters 7 and 8, are consistent with the Conservation Actions proposed in the *Oklahoma Comprehensive Wildlife Conservation Strategy.*

2.5 Global Climate Change

The U.S. Department of the Interior issued an order in January 2001 requiring federal agencies, under its direction, that have land management responsibilities to consider potential climate change impacts as part of long range planning endeavors.
The increase of carbon dioxide (CO_2) within the earth's atmosphere has been linked to the gradual rise in surface temperature commonly referred to as global warming. In relation to comprehensive conservation planning for national wildlife refuges, carbon sequestration constitutes the primary climate-related impact to be considered in planning. The U.S. Department of Energy's "*Carbon Sequestration Research and Development*" defines carbon sequestration as "...the capture and secure storage of carbon that would otherwise be emitted to or remain in the atmosphere."

Vegetated land is a tremendous factor in carbon sequestration. Terrestrial biomes of all sorts – grasslands, forests, wetlands, tundra, and desert – are effective both in preventing carbon emission and acting as a biological "scrubber" of atmospheric CO_2. The Department of Energy report's conclusions noted that ecosystem protection is important to carbon sequestration and may reduce or prevent loss of carbon currently stored in the terrestrial biosphere.

Conserving natural habitat for wildlife is the heart of any long-range plan for national wildlife refuges. The actions proposed in this CCP would conserve or restore land and habitat, and would thus retain existing carbon sequestration on the Refuges. This in turn contributes positively to efforts to mitigate human-induced global climate change.

One Service activity in particular – prescribed burning – releases CO_2 directly to the atmosphere from the biomass consumed during combustion. However, there is actually no net loss of carbon, since new vegetation quickly germinates and sprouts to replace the burned-up biomass and sequesters or assimilates an approximately equal amount of carbon as was lost to the air (Boutton et al. 2006).

Several impacts of climate change have been identified that may need to be considered and addressed in the future:

- Habitat available for cold water fish such as trout and salmon in lakes and streams could be reduced.
- Forests may change, with some species shifting their range northward or dying out, and other trees moving in to take their place.
- Ducks and other waterfowl could lose breeding habitat due to stronger and more frequent droughts.
- Changes in the timing of migration and nesting could put some birds out of sync with the life cycles of their prey species.

The managers and resource specialists on the Refuges need to be aware of the possibility of change due to global warming. When feasible, documenting long-term vegetation,

species, and hydrologic changes should become a part of research and monitoring programs on the refuge. Adjustments in refuge management direction may be necessary over the course of time to adapt to a changing climate.

2.6 Other Plans and Programs

Several other plans and conservation programs may have an impact on future management planning of Washita and Optima NWRs. The following plans/programs represent additional sources of guidance and/or potential funding for refuge habitat development.

North American Bird Conservation Initiative

The North American Bird Conservation Initiative (NABCI), established in 1999, is a coalition of government agencies, private organizations, and bird initiatives in Canada, Mexico, and the United States working to advance integrated bird conservation based on sound science and cost-effective management that will benefit all birds in all habitats. NABCI looks beyond geopolitical boundaries to the entire flight path of the birds. Within the United States, NABCI is represented by a Committee that includes representatives of federal and state resource management agencies and nongovernmental conservation organizations.

This United States NABCI committee and its subcommittees provide forums for:

- Initiating and broadening partnerships for bird conservation across the continent;
- Increasing funding for conserving birds in the United States and wherever else they may occur during their life cycles;
- Making partnerships and resources more effective and efficient by fostering integrated bird conservation;
- Building on existing structures for delivering bird conservation, such as joint ventures, and stimulating new joint venture-like structures and mechanisms as appropriate;
- Developing a common biological framework for conservation planning, design, and delivery;
- Working together through the challenges presented by conserving birds on a landscape scale; and
- Fostering greater cooperation among the nations and peoples of the continent.

North American Waterfowl Management Plan

The North American Waterfowl Management Plan was launched in 1986 in response to record low waterfowl numbers observed in the early 1980s. Recognizing the importance of waterfowl and wetlands to North Americans and the need for international cooperation to help in the recovery of shared resources, the Canadian and United States governments developed a strategy of habitat protection, restoration and enhancement, with the ultimate goal of restoring the waterfowl numbers observed in the early 1970s. The plan also recognized that habitat conservation on federal reservations alone would be insufficient to restore waterfowl numbers. To address the need for coordinated efforts among federal,

state, provincial, institutional and private habitat preserves, the plan established regional joint ventures among multi-sector partners.

The plan was signed by the United States Secretary of the Interior and the Canadian Minister of the Environment. The North American Waterfowl Management Plan Committee, established under the plan, realized that to make the plan effective it would have to be updated regularly to consider changes in the environment, society, and political policy. In 1994 the North American Waterfowl Management Plan was updated and became truly continental in scope when the Secretario de Desarrollo Social Mexico joined the United States Secretary of the Interior and the Canadian Minister of the Environment as a signatory of the plan.

The most recent update of the plan was in 2004. The updated goals seek the protection of 16.1 million acres of wetland ecosystem habitat and the restoration and enhancement of 12.1 million acres of wetland habitat between 2004 and 2019. Waterfowl population goals have been refined beyond the general restoration of population numbers seen in the 1970s to include specific goals for populations of individual duck, goose and swan species and sub-species.

Partners in Flight

Partners in Flight (PIF) was launched in 1990 in response to the growing concerns about declines in the populations of several land bird species, and to emphasize conservation of birds not covered by existing initiatives. The initial focus was on species that breed in the Nearctic (arctic and temperate areas of North America) and winter in the Neotropics (Central and South America), but the focus has since expanded to include most land birds and other species requiring terrestrial habitats.

PIF is a cooperative effort involving partnerships among federal, state, and local government agencies, philanthropic organizations, professional organizations, conservation groups, industry, the academic community, and private individuals.

PIF's goal is to focus resources on the improvement of monitoring and inventory, research, management, and education programs involving birds and their habitats. The PIF strategy is to stimulate cooperative public and private efforts in North, Central and South America to meet these goals.

U. S. Shorebird Conservation Plan

The U.S. Shorebird Conservation Plan is a partnership involving organizations throughout the United States committed to the conservation of shorebirds. The organizations and individuals working on the plan have developed conservation goals for each region of the country, identified critical habitat conservation needs and key research needs, and proposed education and outreach programs to increase awareness of shorebirds and the threats they face. The plan has three major goals at different scales. At a regional scale, the goal of the plan is to ensure that adequate quantity and quality of habitat is identified and maintained to support the different shorebirds that breed in, winter in, and migrate through each region. At a national scale, the goal is to stabilize populations of all shorebird

species known or suspected of being in decline due to limiting factors occurring within the U.S., while ensuring that common species are also protected from future threats. At a hemispheric scale, the goal is to restore and maintain the populations of all shorebird species in the Western Hemisphere through cooperative international efforts.

The plan was developed by a wide array of federal and state agencies, nongovernmental conservation organizations, and individual researchers throughout the country. Major partners include all 50 states, the U.S. Fish and Wildlife Service, the North American Waterfowl and Wetlands Office, most of the Joint Ventures established through the North American Waterfowl Management Plan, the Bureau of Land Management, the U.S. Geological Survey, the U.S. Forest Service, the International Association of Fish and Wildlife Agencies, The Nature Conservancy, National Audubon Society, Ducks Unlimited, the Canadian Wildlife Service, the Western Hemisphere Shorebird Reserve Network, Point Reyes Bird Observatory, and many other regional organizations. Manomet Center for Conservation Sciences initiated the project, obtained the funding to develop the plan, and hired the coordinator to oversee all aspects of the project to date including publication of reports.

The Shorebird Plan is designed to complement the existing landscape-scale conservation efforts of the North American Waterfowl Management Plan, Partners in Flight, and the North American Colonial Waterbird Conservation Plan. Each of these initiatives addresses different groups of birds, but all share many common conservation challenges. One major task is to integrate these efforts to ensure coordinated delivery of bird conservation on the ground in the form of specific habitat management, restoration, and protection programs.

Oklahoma Comprehensive Wildlife Conservation Strategy

This plan was completed by the ODWC in 2005 to focus on steps needed to protect, restore, and enhance habitat types (Conservation Landscapes) for the benefit of Oklahomans and all of Oklahoma's wildlife resources. The plan identifies priority issues and identifies a variety of Conservation Landscapes within six strategy regions. Washita NWR occurs within the Mixed-grass Prairie Region and supports seven Conservation Landscapes listed by the Strategy as having moderate or higher priority (mixed-grass prairies, sand sagebrush/bluestem shrublands, sand plum/hawthorn/sumac shrublands, wetlands, large rivers and sloughs/ponds, streams and associated riparian forests, and woodlands). Optima NWR occurs within the Shortgrass Prairie Region and supports four Conservation Landscapes of moderate or higher priority (short-grass prairie, mixed-grass prairie, herbaceous wetland, and sandy-bottom streams and associated riparian forest).

Priority issues addressed in this plan include the lack of data on species and trends, invasive and exotic species management, land and water uses that may impact species/habitats, and water quantity and quality. Recommended conservation actions include: field studies, conducting surveys, maintaining species databases, mapping the distribution and condition of habitats as well as identifying limiting factors and developing recommendations to enhance species populations and habitats, and monitoring species trends and responses to management practices. The plan also identifies "species of greatest conservation need." Thirty-seven such species of the Mixed-grass Prairie Region

are known to occur at Washita NWR. Thirty-two such species of the Short-grass Prairie Region are known to occur at Optima NWR. Relevant strategies of this CCP and associated step-down management plans will incorporate many of the recommendations in this plan.

2.7 Area of Ecological Concern

An Area of Ecological Concern can be defined as "an essentially complete ecosystem (or set of interrelated ecosystems) of which one part cannot be discussed without considering the remainder" (USFWS, 1985). In the context of this plan, the area of ecological concern is the area in which the impacts of plan actions are generally assessed in the accompanying environmental assessment. A description of each refuge's area of ecological concern should also help the reader understand that refuge's ecological context.

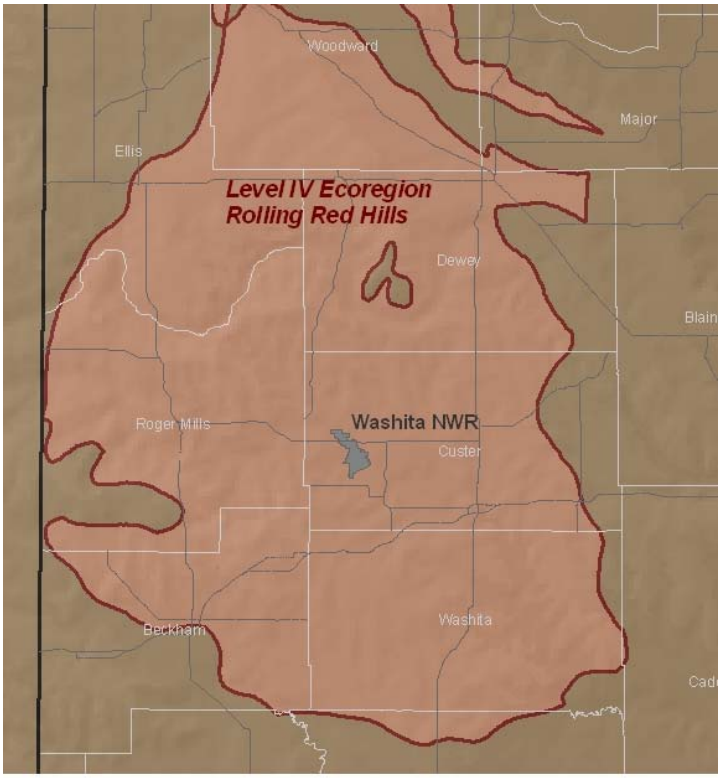

Figure 3. Washita NWR Area of Ecological Concern

Washita

The Area of Ecological Concern for Washita NWR is the Rolling Red Hills ecoregion of the Central Great Plains, as designated by the U.S. Environmental Protection Agency (Figure 3). The Central Great Plains in Oklahoma are largely underlain by red, Permian-age sedimentary rocks and include scattered hills, breaks, salt plains, low mountains, gypsum karst, sandy flats, and sand dunes. Landform diversity is greater than in the High Plains to the west, with elevations ranging from approximately 1,200 feet msl in the east to approximately 2,250 feet msl in the west. Mean annual rainfall increases eastward, and varies from about 22 to 38 inches. Growing season increases towards the south. The upland natural vegetation in this dry-subhumid area is mostly mixed-grass prairie, but mesquite-buffalograss and shinnery oak vegetative types are native, respectively, to the south and to sandy areas; potential natural vegetation is distinct from the short-grass prairie of the semiarid High Plains. Much of the natural vegetation of the Central Great Plains has been replaced by agricultural crops, with wheat, alfalfa, and grain sorghum the primary crops. A fair amount of grazing also occurs in this ecoregion particularly in the western portion of the region, where Washita NWR is located.

The Rolling Red Hills ecoregion, a western subset of the Central Great Plains, includes gently to steeply sloping hills and is characterized by more grazing than crop production, although crops can be grown quite successfully on the more level sites. Upland natural vegetation is mostly mixed-grass prairie. In addition, shinnery oak (*Quercus mohriana)* grows on sand flats and hills in the west, and short grass prairie is found on higher elevation, sandy sites in the northwest. Eastern redcedar (*Juniperus virginiana*) is becoming increasingly widespread on uplands. Ravines are wooded and provide cover for wildlife. Rainfall is limited and variable. During the 1930s, drought and poor soil conservation practices contributed to widespread farm abandonment. Subsequently, many areas have been planted with introduced forage grasses and converted into managed grasslands. Extensive flood control projects are found throughout the Washita River Basin and have modified regional hydrology. Most streams are now entrenched and have sandy, unstable substrates and eroding banks. Most wildlife is confined to the riparian areas.

Optima

The Area of Ecological Concern for Optima NWR is Canadian and Cimarron River Breaks subregion in the eastern portion of the Southwestern Tablelands (Figure 4), This ecoregion is characterized by sandstone and gypsum mesas and outcrops and is cut by tributaries of the Arkansas, Cimarron, North Canadian, and Canadian Rivers. The natural communities of the ecoregion are dominated by short-grass prairies and shinnery oak scrub. Livestock grazing is common in this ecoregion, but cropland is much less prevalent than in adjacent areas. Average annual precipitation varies from less than 15 inches to about 21 inches.

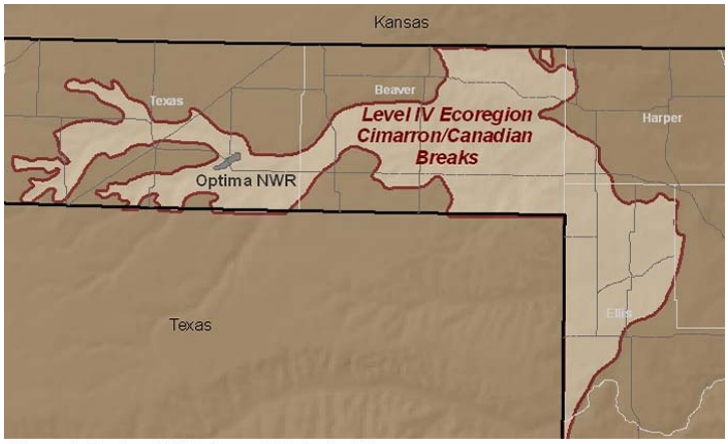

Figure 4. Optima NWR Area of Ecological Concern

Resource threats in this ecoregion center on conversion of native grasslands and scrublands to agricultural production, and overgrazing by domestic livestock. Management opportunities include improvements in grazing regimes, fencing to exclude livestock from riparian zones, and restoration of native grasslands. Species of special management concern include the Lesser Prairie-chicken, other ground nesting birds and the swift fox.

The Canadian and Cimarron River Breaks ecoregion is a subset of the Southwestern Tablelands. This area is characterized by rugged topography; dissected canyons, escarpments, hills, buttes, terraces, and dunes are common. Due to topography, croplands are uncommon. The native vegetation is mixed-grass prairie, but dunes along major streams support sand sagebrush-bluestem shrublands, and cottonwood-willow riparian zones are typical along streams. The area was formerly characterized by numerous springs and seeps in ravines, but the recent drawdowns of the Ogallala aquifer have dried

many of these. As springs dry, some formerly perennial streams now flow only intermittently.

2.8 Refuge General Description

2.8.1 Washita NWR

Washita NWR is an overlay of the BOR's Foss Reservoir, located in Custer County (population 25,230 [populations given are 2003 or 2004 estimates from the U.S. Census Bureau]), Oklahoma, approximately 120 miles west of Oklahoma City (population 523,303), Oklahoma. The refuge is located within seven miles of Butler (population 329) and Hammon (population 439), and is within 30 miles of Clinton (population 8,364) and Elk City (population 10,511), Oklahoma. The 8,075-acre refuge is composed of mixed-grass prairie, riparian woodland, wetland, and open water habitats, as well as areas farmed to produce forage for waterfowl and moist soil management areas. This mixture of ecotypes encourages a diversity of plant and animal species including migratory waterfowl.

Mineral rights for much of the refuge were retained by the previous land owners when Washita NWR was established. There are currently six gas producing wells on the refuge.

Topographically, the refuge lies on the north end of Foss Reservoir on the Washita River at elevations from 1,640 to 1,740 feet msl.

Figure 5. National Wildlife Refuges in Oklahoma

Other refuges within Oklahoma include the Salt Plains NWR approximately 120 miles to the north; Deep Fork NWR, Ozark Plateau NWR, and Sequoyah NWR between 200 to 250 miles to the east; and Wichita Mountains NWR, Tishomingo NWR, and Little River NWR which are located between 70 to 300 miles southeast of Washita NWR (Figure 5).

2.8.2 Optima NWR

Optima NWR is a satellite station headquartered at Washita NWR. Optima NWR is an overlay of the Corps Optima Reservoir Project, located in the southeast quarter of Texas County (population 20,296), near the center of the Oklahoma Panhandle. The refuge is approximately 14 miles east-southeast of Guymon, Oklahoma (population 10,565) and just northwest of Hardesty, Oklahoma (population 271). Optima NWR is flat to rolling,

consisting primarily of creek bottom, adjoining bluffs, and uplands, ranging from approximately 2,730 to 2,920 feet msl. The 4,333-acre refuge is located on the Coldwater Creek arm of Optima Reservoir, but the only semi-permanent standing water on the refuge is located in small wetlands in the lowest reach of Coldwater Creek. The largest single habitat type on the refuge is sagebrush, covering about 1,925 acres. Other areas of the refuge support riparian cottonwoods, mixed-grass prairie and croplands that produce seeds and forage for wildlife. This habitat supports a diversity of upland game birds, raptors, mammals, and migratory songbirds. The nearby Optima Reservoir attracts waterfowl and shorebirds.

Mineral rights were retained by the previous land owners when Optima NWR was established. There are currently four gas producing wells on the refuge.

2.9 Planning Perspectives

This comprehensive planning effort will integrate three perspectives so that future management activities will incorporate adaptive management approaches. The plan includes:

1. A broad perspective for overall environmental issues including endangered species, ecological integrity, water issues, interjurisdictional cooperation, and socioeconomic considerations.

2. A focused perspective for the National Wildlife Refuge System related to policy issues which affect the Washita/Optima NWR Complex programs (compatibility, endangered species management, water rights, water quality, etc.).

3. A local perspective for refuge related activities and programs affecting land and species management (habitat management, land protection, endangered species management, research, contaminants, recreational use, etc.).

An understanding of these perspectives and the relationship between them led to the formulation of an integral set of refuge goals, objectives, and management actions included in this document.

2.10 Issues and Challenges

The following is a list of major issues and challenges that have been identified by refuge staff, partners, adjacent landowners, and other stakeholders. The questions were derived from ongoing management concerns and are addressed in the text of the CCP and/or within the goals and objectives section. They are not presented in any order of priority, nor are the refuges' current actions addressed.

Issue 1. Depredation

Washita NWR

Since the creation of the refuge, adjacent farmers have complained of crop depredation by Canada Geese drawn to the refuge. In recent years complaints regarding depredation by the area's increasing population of white-tailed deer have increased.

- What strategies, if any, should be adopted by the refuge to reduce depredation off refuge?
- What additional monitoring is necessary to adequately understand what is occurring?
- Should the refuge provide technical assistance to the private landowners to help reduce depredation on surrounding farmland?
- What types of technical assistance would be most feasible and most benefit private landowners suffering depredation on their farmland?

Optima NWR

Crop depredation from wildlife drawn to the refuge has not been a problem.

Issue 2. Baseline Inventory (issues common to both refuges)

A baseline inventory of all plants, animals, fish, and other components of the biotic and abiotic communities is needed to properly manage fish and wildlife and their habitats on both refuges. The information gleaned from the inventory would provide the basis for assessing the potential impacts of management alternatives.

- What baseline surveys are necessary to inventory existing biological resources?
- What additional inventory, analysis and monitoring is necessary to adequately understand what is occurring on the refuges?
- What strategies should be adopted to improve the monitoring and evaluation of plant and wildlife resources on the refuges?
- Should recreational impacts on plant and wildlife resources be formally assessed?
- Should the refuges establish long-term monitoring programs to better understand the present and future status of species of concern?

Issue 3. Environmental Education and Community Outreach

Washita NWR

The Washita NWR has many opportunities to increase community involvement and assistance in natural resource programs, enhance wildlife compatible recreational opportunities, and expand wildlife education and community outreach. Community outreach and environmental education will be instrumental in building a supportive constituency and furthering the understanding, appreciation, and stewardship of our natural resources.

- What environmental education and interpretation programs should be implemented?
- What outreach media should the refuge create and distribute?
- What interpretive efforts can be implemented for the refuge?
- What educational services/experiences should the refuge offer to area schools and teachers?
- What emphasis should be given to off-site educational and informational programs?
- What physical accommodations are needed to make refuge facilities accessible?
- What adaptive changes are needed to make refuge programs accessible?

Optima NWR

There are few opportunities for direct involvement in environmental education and community outreach at Optima NWR, due to the lack of on-refuge staff.

- What types of outreach efforts can be implemented with no permanent, on-site staff?
- What level and types of visitation should be encouraged at Optima NWR?
- What technologies can be used to enhance a visitor's experience at Optima NWR?

Issue 4. Cultural Resources

Washita WNR

There is evidence of several undocumented prehistoric and historic cultural sites on the refuge. Identification and monitoring of cultural resource sites would aid in their protection from disturbance and degradation. A cultural resources survey would provide the documentation needed to protect such resources on the refuge and provide more complete information that would allow better interpretation of the resources.

- What baseline surveys are necessary to document any existing archaeological sites?
- Should a comprehensive archaeological survey be conducted on the refuge?
- What actions need to be taken to better understand and protect cultural and historical resources on the refuge?

Optima NWR

Little is known about prehistoric or historic sites on the refuge. Identifying any existing sites would aid in their protection. The issue questions for Washita also apply to Optima NWR.

Issue 5. Funding and Staffing

Washita NWR

There are many opportunities for the refuge to expand its operations to include programs that encourage visitation, engage the visitor, and serve the community by increasing public awareness, understanding, and appreciation of the area's natural resources. There is a need for additional biological support to conduct baseline inventory and monitoring in Issue 2 above. An increased law enforcement presence is needed to insure adequate protection of resources and refuge visitors. Implementation of any of these opportunities is dependent on additional funds and staff. The Service's Southwest Region is currently developing a Refuge Workforce Plan (RWP). The overall goal of this plan is achieving an optimum ratio of personnel costs to other operating costs at refuges. It is likely that the RWP will result in decreased staffing at Washita NWR, but its exact impact is not yet known. The RWP can be reviewed at http://www.fws.gov/southwest/refuges/index.html.

- What staffing and funding is required in order to achieve the goals and objectives of this plan?
- What specific staffing should be identified for the near term that will help in plan implementation?
- How would reductions in staffing affect refuge management and operations?
- Is there a need for a dedicated Law Enforcement Officer?
- What opportunities should the refuge pursue to enhance and expand existing refuge management, biological inventory and monitoring, and visitor services programs, and what level of staffing and funding would be required to address these opportunities?
- Are current refuge facilities adequate?

Optima NWR

The current lack of permanent staff at the refuge and distance between Optima NWR and the headquarters at Washita limit refuge management activities to those which can be accomplished during infrequent visits by staff, and severely restrict provision of visitor services.

- What provisions could be made to allow a greater management presence on the refuge?
- What is the feasibility of staff splitting time between the Optima and Washita NWRs?
- What facilities could be added to Optima NWR to enhance the visitor experience without requiring additional staff levels?

Issue 6: Water Management

Washita NWR

Water management activities on Washita NWR are primarily related to pumping water into moist soil units and retaining that water through dikes and release gates. The refuge currently owns a right to 300 acre-feet per year. As the refuge is on the "bottom of the watershed" of Foss Reservoir, additional pumping beyond the 300 acre-foot right is possible whenever adequate flows exist in the Washita River, the major water source in the area.

- What strategies should the refuge implement to restore, maintain, and protect sections of the natural stream and floodplain zones of the Washita River tributaries to benefit native plant and animal communities?
- What are the minimum, appropriate tools necessary to better inventory, monitor and evaluate refuge water resources?
- What strategies could be used to protect valuable riparian habitat?
- What is the best way to coordinate water management activities with other water users?
- Should additional water rights for the refuge be obtained to allow for better wetland management?

Optima NWR

Optima NWR was established without water rights. It was anticipated that the Optima Reservoir would inundate portions of the refuge and create aquatic and wetland habitat. Because the reservoir pool never reached the anticipated levels, the refuge supports only very limited wetland habitat and has little potential for effective water management.

- Should the refuge examine any means of retaining ephemeral flows of Coldwater Creek on site?
- What effect on local water management would refuge programs cause?

Issue 7: Hunting Opportunity

Washita NWR

There is increased demand for hunting opportunities on public land in western Oklahoma. To control an over-abundant white-tailed deer population, the refuge initiated a youth hunt in 2001, and a limited general hunt for deer in 2002. Controlled waterfowl and small game (quail and rabbit) hunting is also allowed on the refuge.

- What level of hunting facilities (deer hunting blinds, goose hunting blinds) is appropriate?
- What strategies should be adopted to improve the monitoring and evaluation of deer populations on the refuge?
- What type and level of hunting should be allowed on the refuge?
- What is needed to make hunt programs accessible?
- Should recreation impacts on wildlife resources be formally assessed?

Optima NWR

Deer and upland game bird hunting occurs on the refuge in accordance with ODWC regulations.

- What level of hunting is appropriate at the refuge?
- Is additional regulation and oversight of hunting on the refuge necessary or appropriate?
- What is needed to make hunt programs accessible?

2.11 Wilderness Potential

Wilderness areas are lands designated by Congress to be managed in accordance with the terms of the Wilderness Act of 1964 (Wilderness Act). An area of wilderness as defined in the Wilderness Act (U.S.C. 1121) is "an area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprints of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or primitive and unconfined type of recreation; (3) has a least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value."

The Service considers the potential for designating wilderness areas on each refuge in the system during the CCP process. Refuges are evaluated for the presence of: 1) existing physical structures (roads, houses, buildings, water facilities, and other structures); 2) legal requirements/constraints (including, but not limited to endangered species); 3) management priorities (including, but not limited to prescribed fires, wildlife habitat/wetland development, and visitor services) and the suitability of the refuge, given these constraints for wilderness designation.

2.11.1 Washita NWR

Washita NWR does not conform to the definition of a wilderness, as described in the Wilderness Act of 1964. Over 1,800 acres of the refuge were inundated when Foss Reservoir was impounded in the early 1960s. Of the remaining acreage, historical agricultural practices, construction of access roads, and other human activities have noticeably affected the landscape. In addition, due to existing rights-of-way, there are no extensive undisturbed areas that provide for outstanding solitude and primitive recreational opportunities. Designation of a wilderness area that meets the standards of the Wilderness Act (+/- 5,000 acres) would potentially conflict with other management goals because the refuge is only 8,075 acres in size.

2.11.2 Optima NWR

No areas within Optima conform to the definition of a wilderness, as described in the Wilderness Act of 1964. The entire refuge occupies only 4,333 acres and this area is roughly bisected by a prominent bridge supporting a highway designated both as State Highway 3 and U.S. Highway 412 (hereafter called "Highway 3/412"). This highway is noticeable, either visually, audibly or both from virtually all areas of the refuge. Highway 3/412 and residences near the refuge boundary limit the refuge's solitude and render it unsuitable for wilderness status.

2.12 Expected Planning Outcomes

This planning document should result in the following outcomes:

1. Ensure that management of Washita/Optima NWRs reflects the policies and goals of the Refuge System and the purposes for which the refuges were established.

2. Ensure that the Washita/Optima NWRs contribute to the conservation of ecological integrity and to the structure and function of the ecosystem wherein the refuges are located.

3. Provide a clear statement of desired future conditions for the Washita and Optima NWRs resulting from the successful accomplishment of goals and objectives stated in the plan.

4. Provide a systematic process to aid decision making by identifying opportunities, issues, and concerns; collecting, organizing and analyzing information; and developing and considering a range of management alternatives.

5. Provide a forum for determining the compatibility of uses on the Washita/Optima NWRs.

6. Ensure other Service programs, other agencies, and the public have opportunities to participate in management decisions for the refuges.

7. Provide a consistent approach for budget requests for operational, maintenance, and capital development programs that accomplish Washita/Optima NWRs and Service purposes.

8. Provide a basis for monitoring progress and evaluating plan implementation on the refuges.

9. Provide long-term continuity in the management of the refuges.

2.13 Public Involvement

In October 1999, Research Management Consultants, Inc, (RMCI), a private firm that initiated work on this CCP, mailed a refuge fact sheet and request for comments on management to individuals appearing on a mailing list the refuge prepared. RMCI held an open house on November 18, 1999 to solicit public comments. A second open house arranged by Service staff was held on May 26, 2005. Comments were used to identify and develop planning issues and were considered throughout the planning process. There will be additional opportunities for members of the public to comment on this CCP when a draft CCP is available for review and comment.

3.0 WASHITA NWR RESOURCES

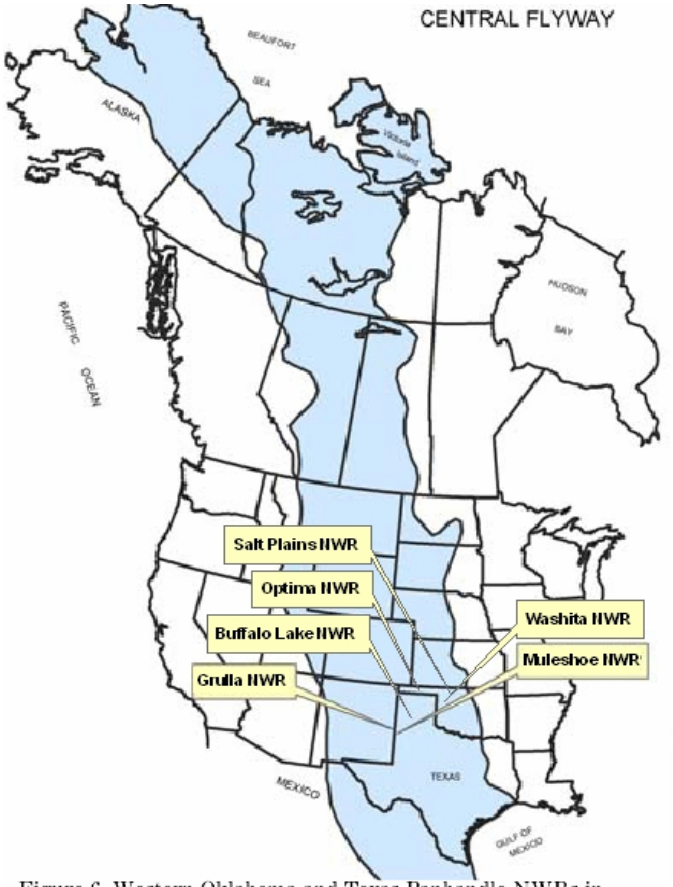

Figure 6. Western Oklahoma and Texas Panhandle NWRs in Central Flyway context

Migration routes of waterfowl to and from nesting habitat in Canada and the northern United States and wintering habitat in the southern United States, Central and South America pass over Oklahoma via the Central Flyway. National Wildlife Refuges have been established along this and other flyways to provide resting and wintering habitat for migrating waterfowl. Washita NWR, with its strategic location, complements the Buffalo Lake, Muleshoe, Grulla, and Salt Plains NWRs as Western Oklahoma/Texas Panhandle refuges that provide such habitat in the Central Flyway (Figure 6).

3.1 Vegetation

The refuge is situated in the Mixed-grass Plains District of the Kansas Biotic Province. The district is essentially a transition area from the tall-grass prairie of the east to the short-grass plains of the west. Dominant native grasses include big bluestem (*Andropogon gerardii*), little bluestem (*Schizachrium scoparium*), Indiangrass (*Sorghastrum nutans*), buffalograss (*Buchloe dactyloides*), and several species of grama grasses (*Bouteloua*, spp.).

Deciduous trees along the waterways include elms (*Ulmus* spp.), black willow (*Salix nigra*), hackberry (*Celtis occidentalis*), western soapberry (*Sapindus saponaria* var. *drummondii*), bur oak (*Quercus macrocarpa*), and eastern cottonwood (*Populus deltoides*). Figure 7 depicts the refuge vegetation associations.

3.1.1 Native Prairie

A mixture of many short-grass, mid-grass, and tall-grass prairie species comprise the vegetation on approximately 3,200 acres of the grasslands. Approximately 1,140 acres of this grassland is native prairie. There is a preponderance of big bluestem and little bluestem, switchgrass (*Panicum virgatum*), Indiangrass, sideoats grama (*Bouteloua curtipendula*) and buffalograss. Native shrubs and forbs include sand sagebrush (*Artemisia filifolia*) and yucca (*Yucca glauca*).

3.1.2 Wetlands and Moist Soil Units

The refuge's wetland habitat lies mostly along the shores of Foss Reservoir and along the Washita River and small tributaries. Washita NWR is an "overlay" on the BOR reservoir and has no control over water levels. The refuge maintains four moist soil units, comprising approximately 84 acres. Water for these moist soils units is pumped out of the Washita River in compliance with the refuge's right to 300 acre-feet per year. As needed, additional water is pumped pursuant to an agreement with the BOR and Foss Reservoir Master Conservancy District (FRMCD) that allows the refuge to pump water not needed to meet FRMCD water delivery requirements (see Appendix I).

Vegetation along wetland areas includes sedges (fam. Cyperaceae), black willow, and eastern cottonwood. Various species of aquatic plants such as native millet (*Panicum decompositum*), pondweed (*Potamogeton* spp.), smartweed (*Polygonum* spp.), arrowleaf (*Sagitaria* spp.), cattail (*Typha* spp), rush (*Scirpus* spp.), bulrush (*Scirpus* spp.), and sedge grow in seasonally flooded and permanent wetlands when moist soil conditions are conducive for seed germination.

3.1.3 Cropland

Approximately 2,000 acres are planted annually. Warm season rotations include legumes and milo. Cool season crops are winter wheat, rye, and winter peas.

3.1.4 Exotics and Weeds

Exotic and weed species include salt cedar, Chinese elm (*Ulmus parvifolia*), Johnsongrass (*Sorghum halepense*), Russian thistle (*Salsola kali*), pigweed (*Amaranthus* spp.), cheat grass (*Bromus tectorum*), and red horned poppy (*Glaucium corniculatum*). Johnsongrass is a major pest throughout the entire refuge and surrounding area. It occurs on most areas of the refuge that were previously farmed, grazed, or otherwise disturbed.

3.2 Wildlife

Although Washita NWR was established primarily for ducks, geese, and sandhill cranes, its variety of habitats provides for a diversity of fish and wildlife common to western Oklahoma. Approximately 271 species of birds, 48 species of mammals, 60 species of reptiles and amphibians, and 28 species of fish occur on the refuge. The refuge has a comprehensive species list for birds and fish compiled from biological inventories. Most accounts of mammals, reptiles, and amphibians are from range descriptions or opportunistic sightings, although some systematic studies have been done. It should be noted that wildlife inventory data collection is ongoing and new species are identified periodically. For a list of wildlife species, see Appendices A through D.

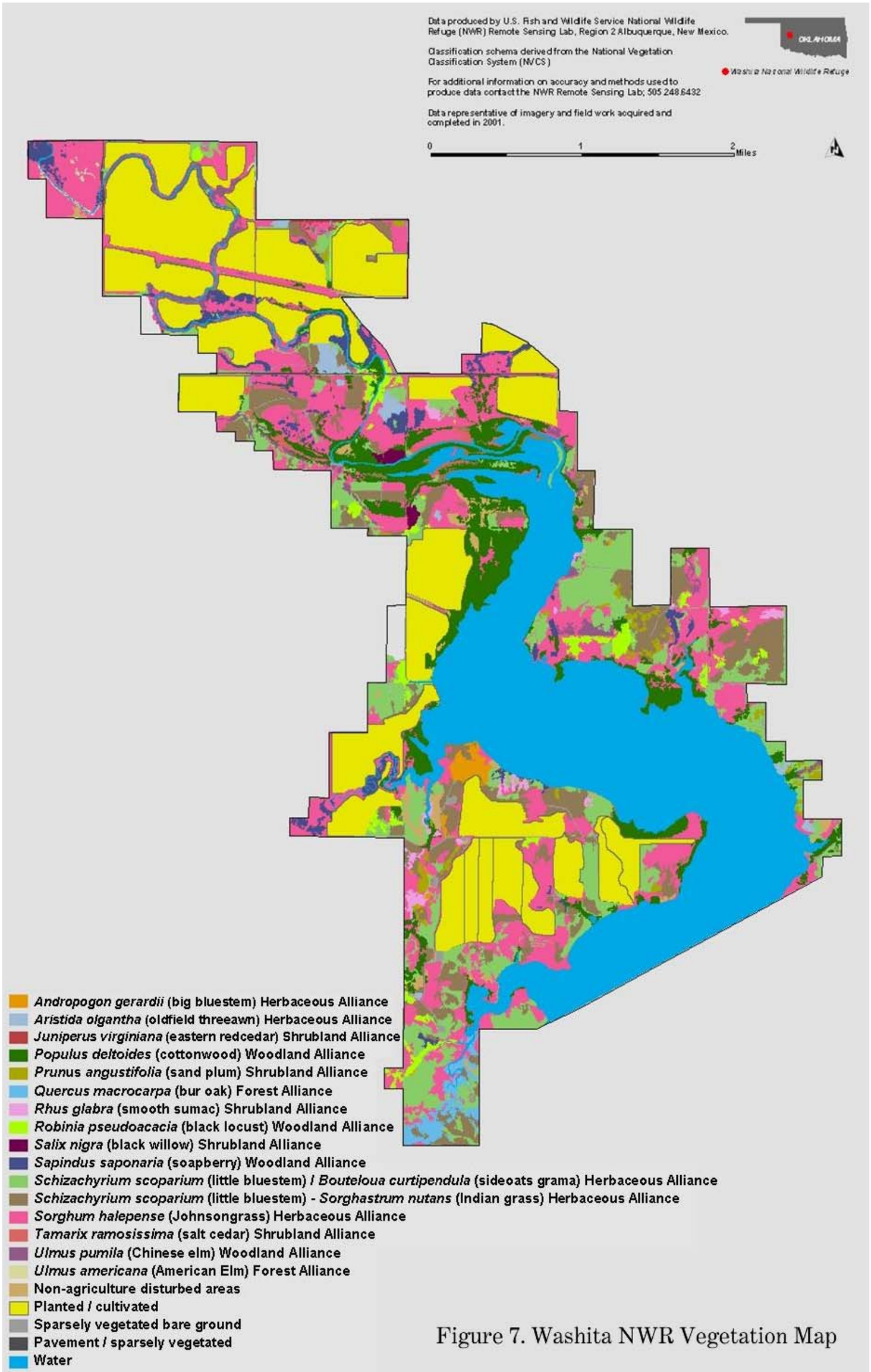

Figure 7. Washita NWR Vegetation Map

3.2.1 Mammals

There are approximately 48 resident mammal species known to inhabit the refuge. Resident mammal species commonly seen on the refuge include white-tailed deer (*Odocoileus virginianus*), eastern fox squirrel (*Sciurus niger*), and eastern cottontail (*Sylvilagus floridanus*). Mammals that are common but seen less often because of their habits are coyote (*Canis latrans*), raccoon (*Procycon lotor*), American badger (*Taxidea taxus*), American beaver (*Castor canadensis*), and porcupine (*Erethizon dorsatum*).

The refuge population of white-tailed deer has grown steadily over the years. Deer can often be seen foraging and resting along the refuge roads, in farm fields, and near the refuge headquarters. See Figure 8 for a summary of deer observed during winter evening counts and fall spotlight surveys from 1995 through 2006. In comparing the deer surveys a few points should be kept in mind. The September spotlight count occurs before the hunting season, but is limited due visual range limits with the spotlight. The January evening counts occur after the annual hunt but with improved visibility in evening natural light.

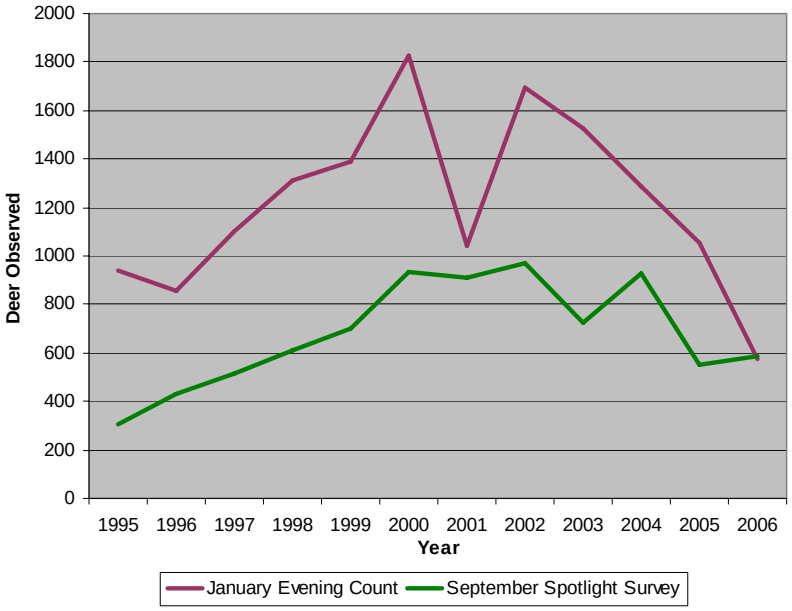

Figure 8. Washita NWR White-tailed Deer Survey Results

3.2.2 Birds

Commonly seen waterfowl species include the Mallard (*Anas platyrhynchos*), Canada Goose (*Branta canadensis*), Northern Shoveler (*Anas clypeata*), Northern Pintail (*Anas acuta*), Redhead (*Aythya americana*), Gadwall (*Anas strepera*), Green-winged Teal (*Anas crecca*), and American Coot (*Fulica americana*).

Other common wetland species include the Great Blue Heron (*Ardea herodias*), Sandhill Crane (*Grus canadensis*), Long-billed Dowitcher (*Limnodromus scolopaceus*), American White Pelican (*Pelecanus erythrorhynchos*), Double-crested Cormorant (*Phalacrocorax auritus*), Snowy Egret (*Egretta thula*), and Great Egret (*Ardea alba*).

Raptors that frequent the refuge include the Bald Eagle (*Haliaeetus leucocephalus*), Red-tailed Hawk (*Buteo jamaicensis*), Northern Harrier (*Circus cyaneus*), Mississippi Kite (*Ictinia mississippiensis)*, and American Kestrel (*Falco sparverius*).

Figures 9, 10, and 11 below summarize recorded use of Washita NWR by Sandhill Cranes, Ducks and Geese. One use day is equal to use by one bird for one day.

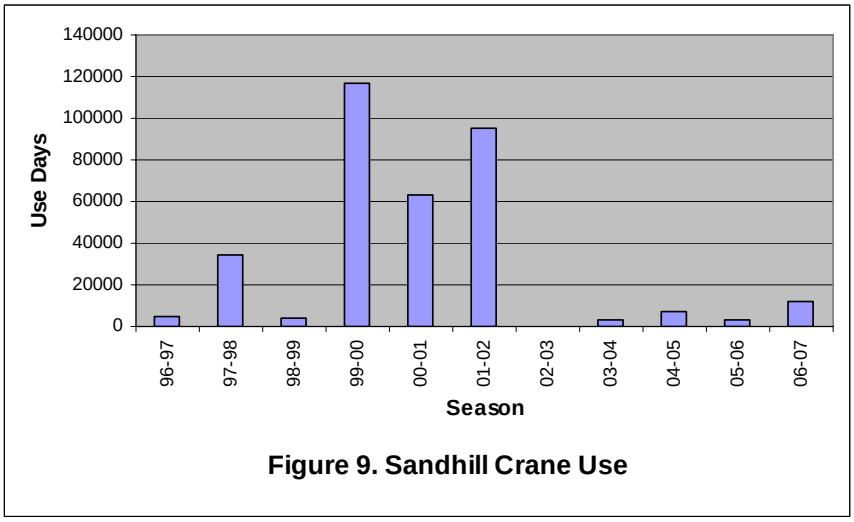

Figure 9. Sandhill Crane Use

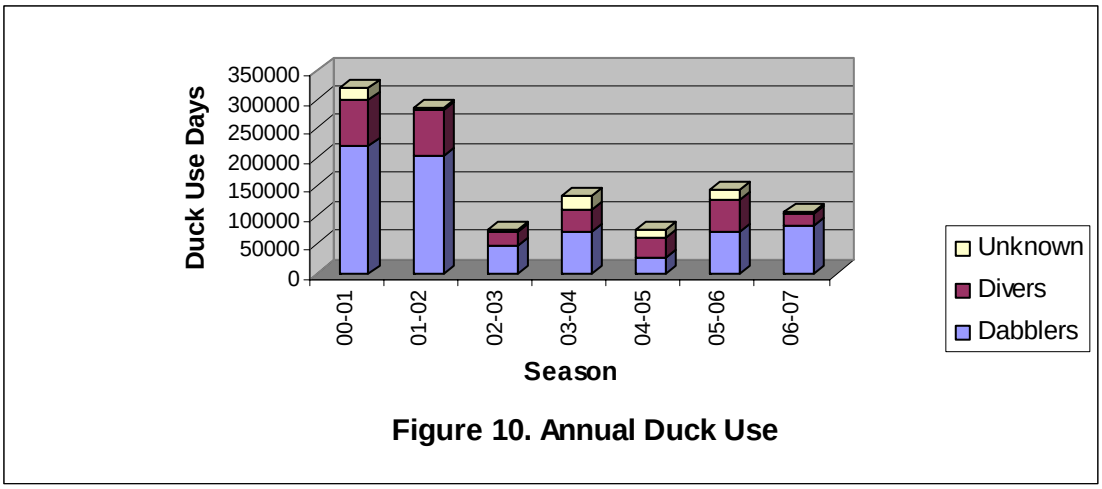

Figure 10. Annual Duck Use

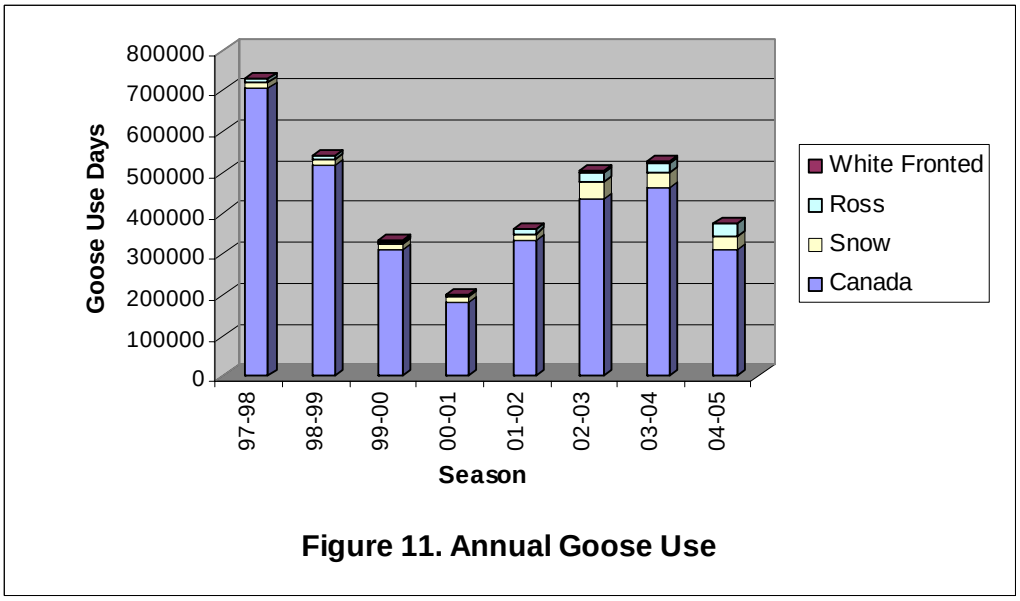

Figure 11. Annual Goose Use

Resident game bird species routinely seen on the refuge include the Rio Grande Turkey (*Meleagris gallopavo*) and Northern Bobwhite (*Colinus virginianus*).

Turkey Vulture (*Cathartes aura*) are also commonly seen at the refuge.

3.2.3 Reptiles and Amphibians

At least 60 species of reptiles and amphibians inhabit the refuge. Many of the turtles, snakes, and amphibians can be seen sunning themselves along the shores of Foss Reservoir. While snakes such as the coachwhip (*Masticophis flagellum*) and bullsnake (*Pituophis melanoleucus*), and lizards like the six-lined racerunner (*Cnemidophorus sexlineatus*) may be common, the frogs and toads are probably more noticeable because of their vocalizations. Bullfrogs (*Rana catesbeiana*) and plains leopard frogs (*Rana blairi*), and toads such as the great plains toad (*Bufo cognatus*), are well known for their calls that fill the spring and summer evenings. The snapping turtle (*Chelydra serpentina*) and ornate box turtle (*Terrapene ornata ornata*) are examples of the turtles that are also found on the refuge.

3.2.4 Fish

At least 28 species of fish inhabit the refuge. Channel catfish (*Ictalurus punctatus*), walleye (*Stizostedion vitreum*), white bass (*Morone chrysops*), white crappie (*Pomoxis annularis*), bluegill (*Lepomis macrochirus*), and largemouth bass (*Micropterus salmoides*) are abundant in Foss Reservoir. Hybrid species present include wipers, a hybrid of white bass and striped bass (*Morone chrysops* x *M. saxatilis*), and saugeye, a hybrid of walleye and sauger (*Stizostedion vitreum* x *S. canadense*). Nongame fish include gizzard shad (*Dorosoma cepedianum*), common carp (*Cyprinus carpio*), and mosquitofish (*Gambusia affinis*).

3.2.5 Invertebrates

While invertebrates may outnumber all other species on the refuge combined, they are rarely the focus of attention. Damselflies and dragonflies (Odonata) are common, as well as mosquitoes and midges (Diptera). Beetles (Coleoptera) and backswimmers (Hemiptera) are common, as are moths and butterflies (Lepidoptera). Aquatic species that are common include the larvae of many of the previously mentioned insects as well as crayfish, water fleas (Crustacea), and snails and bivalves (Mollusca). Many of these species serve as the forage to support the large populations of wildlife on the refuge.

3.3 Threatened, Endangered, and Species of Concern

The refuge provides habitat for several federally listed threatened, endangered, and candidate species. As defined by the Endangered Species Act of 1973 (ESA), an "endangered species" is any species which is in danger of extinction throughout all or a significant portion of its range; a "threatened species" is any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Candidate species are those for which insufficient information is currently available for listing as threatened or endangered. Some species inhabit the

refuge on a regular or seasonal basis while others are migrants that are infrequently sighted on the refuge.

The refuge provides technical assistance on endangered species management to neighbors and individuals from the private sector whenever it is requested.

Bald Eagles, Interior Least Terns, and Whooping Cranes use the refuge seasonally or during their migrations. For a listing of threatened and endangered species, refer to Appendix E. and Table 1

3.3.1 Bald Eagle

The Bald Eagle was listed as endangered on March 11, 1967. The population's dwindling numbers were largely due to pesticide contamination, loss of riparian habitat, and human disturbance. On August 11, 1995, the Bald Eagle was down-listed from endangered to threatened in the majority of the contiguous U.S., including Oklahoma, due to nationwide recovery efforts. Bald Eagles are winter residents that feed and roost on the refuge. Eagles traditionally winter in the cottonwoods on the shores of Foss Reservoir. Roost sites, open water, abundant waterfowl, and fish on or near the refuge make it an attractive haven for wintering bald eagles. Historically, the population peaks in January. Bald Eagles are considered uncommon on the refuge.

3.3.2 Interior Least Tern

The Interior Least Tern (*Sterna antillarum athalassos*) was listed as endangered on May 28, 1985. This waterbird nests in colonies on the ground, typically on sites that are sandy and relatively free of vegetation. All subspecies of the Least Tern apparently were abundant until their near extirpation in the late 1880s for their delicate plumage used on fashionable hats at that time. After the signing of the 1918 Migratory Bird Treaty Act, commercial harvesting became illegal and the species began to increase through the 1940s. However, human development and use of tern nesting beaches for housing and recreation subsequently led to another rapid population decline. In the interior United States, river channelization, irrigation diversions, and the construction of dams contributed to the destruction of much of the Interior Least Tern's sandbar nesting habitat. By the mid 1970s Interior Least Tern populations had decreased by more than 80 percent from the levels of the 1940s. Interior Least Terns are rarely seen on the refuge during their migrations.

3.3.3 Whooping Crane

The Whooping Crane (*Grus americana*) was listed as endangered on March 11, 1967. Once widespread in North America, by 1941 the species had declined to about 16 individuals in a single wild flock that migrated between Canada and coastal Texas (Lewis 1995). The Whooping Crane has begun a slow but steady recovery. As of December 13, 2006, Crane numbers had increased to 237 (192 adults and 45 chicks) in the wild flock that migrates between Wood Buffalo National Park in Canada and Aransas NWR in coastal Texas. A resident, non-migratory flock in Florida, an experimental eastern migratory population and captive birds bring the species' total to 518 (USFWS 2006). The species' historic wintering grounds included southwestern Louisiana, the Gulf Coast of Texas, interior west

Texas, the highlands of northern Mexico, and Atlantic coastal areas of New Jersey, Delaware, South Carolina, and Georgia (DeHoyo et al., 2000). During migration they feed and roost in a wide variety of habitats including croplands, large and small freshwater marshes, the margins of lakes and reservoirs, and sandbars in rivers. Several factors contributed to the historic decline of the species, including the draining of crucial wetland habitat, conversion of their habitat to rice culture (Allen, 1952), coastal and marine pollution, illegal hunting, disease, predation, collision with utility lines, loss of genetic diversity within the population, and vulnerability to natural and human caused disturbances. Whooping Cranes are rarely seen on the refuge during their migration.

3.3.4 Flora

No plant species listed as endangered or threatened at the federal or state level is known to occur at Washita NWR.

Table 1 - Known Federally Listed Threatened and Endangered Fauna Species of Washita NWR.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
Haliaeetus leucocephalus	Bald Eagle	Threatened	Threatened
Grus americana	Whooping Crane	Endangered	Endangered
Sterna antillarum athalassos	Interior Least Tern	Endangered	Endangered

3.3.5 Species of Concern

Several species have been proposed as candidates for protection under the ESA or have Special Status in Oklahoma.

Category I - any native species with a presently stable or increasing population that current evidence indicates is especially vulnerable to extirpation because of limited range, low population or other factors.

Category II - any native species identified by technical experts as possibly threatened or vulnerable to extirpation but for which little, if any, evidence exists to document the population level, range or other factors pertinent to its status.

Declines may be related to loss and fragmentation of suitable habitat, increasingly large areas being cultivated for crops, drought, loss of playa lakes, lack of natural fire regime, and the replacement of native grasses with exotic grasses. The following Oklahoma Species of Special Concern have been documented to occur on the refuge or surrounding area, or could occur on the refuge but are undocumented.

Black-tailed Prairie Dog (*Cynomys ludovicianus*) – Prairie dogs live in short-grass and mid-grass prairies and grass-shrub habitats (Finch, 1992). The historic range of the black-tailed prairie dog covered approximately 100 million acres and extended over 12 states throughout the Great Plains from southern Canada through most of the west-central United States to northern Mexico. The black-tailed prairie dog has been restricted to less than one percent of its original range due to poisoning by private landowners, plague, and shooting. The remnant population is fragmented into sub-populations of various sizes. This species is considered a critical link or keystone species, one that significantly influences the distribution, abundance, and or diversity of other species (Kotilar et al., 1999; Finch, 1992). It is also considered an ecosystem regulator in that its normal activities lead to manipulation of soils as well as increases in plant and animal densities. Black-tailed prairie dogs are beneficial to species requiring holes, unvegetated areas, and short vegetation, as well as prairie dog predators (Clark et al., 1982). A small group of prairie dogs is present near the refuge headquarters.

Texas Horned Lizard (*Phrynosoma cornutum*) - A precipitous decline was documented in populations of the Texas horned lizard in 1992. This species ranges from the south central U.S. to northern Mexico and is found in arid and semiarid habitats in open areas with sparse vegetative cover throughout much of Texas, Oklahoma, Kansas, and New Mexico. The Texas horned lizard is easily differentiated from the other North American species of horned lizard by the double row of spines on each side of the abdomen. Pesticides, loss of habitat, the displacement of harvester ants by fire ants, past collection for the pet trade (now illegal in Oklahoma), and other causes are suspect in this species decline (ODWC, undated). The Texas horned lizard feeds heavily on ants and other insects and arthropods as available. Currently, it is state listed as a Species of Special Concern Category 2. The ODWC is tentatively planning a project that will target historical horned lizard sites. There is a closed season on Texas horned lizards in effect now, as listed in the ODWC reptile and amphibian regulations. Texas horned lizards have been observed on the refuge.

Ferruginous Hawk (*Buteo regalis*) - The Ferruginous Hawk is primarily found on grassy prairies, dry mesas, and habitats that support many rodents and rabbits. Ferruginous Hawks range over much of the western half of the United States. Conversion of grassland to intensive cultivation has reduced the amount of preferred habitat that is available to the Ferruginous Hawk and has been implicated in the population decline of the species in some areas (Schmutz, 1984; Olendorff, 1993). Agricultural development has restricted the species to areas of greater topographic relief or other areas unsuitable for agriculture (Stewart, 1975). Nest disturbance, shooting while perched along roadsides, and widespread control of prairie dogs (a vital food source) are other factors that may have led to the current decline of this species. The fall migration of Ferruginous Hawks is also tied to prairie dog colony locations, as the hawks eat young dogs as well as other rodents associated with the towns (Dechant et al., 1999). It is uncommon to see Ferruginous Hawks on the refuge. Ferruginous Hawks are uncommon but fairly regular winter residents on or near the refuge.

Swainson's Hawk (*Buteo swainsonii*) - The Swainson's Hawk is associated with grasslands, sage-steppe, and agricultural habitats. In many areas, Swainson's Hawks have adapted to farmed habitats, nesting in windbreaks and farmstead trees. The hawk prefers semi-open and open habitats which are best for aerial foraging (hunting while flying). During the nesting season, Swainson's Hawks typically prey on small mammals such as ground squirrels and voles, as well as an occasional small bird or lizard (USDA, 1998). Swainson's Hawks are fairly commonly observed on the refuge.

Peregrine Falcon (*Falco peregrinus*) - The Peregrine Falcon was listed as endangered on June 2, 1970. Their shrinking numbers were the result of decreased nesting success attributed to accumulation of chlorinated pesticides such as DDT and its metabolite DDE. The population has shown a tremendous comeback from the bird's most critical low level of 30 pairs in the mid 1960s. By captive breeding and release programs, the population of these birds has rebounded remarkably and has exceeded the recovery goals for this species. Recovery efforts resulted in delisting of the Peregrine Falcon on August 25, 1999, but the species is still monitored by FWS to verify its recovered status. Peregrine Falcons are infrequent visitors to the refuge.

Prairie Falcon (*Falco mexicanus*) - In the field, Prairie Falcons can be recognized by their large size, distinctive wing shape, and lack of sharply contrasting colors, as seen in the Peregrine Falcon. This species is found only in western and central North America, Baja California, and northern Mexico. Typically found in arid and semiarid plains, this falcon prefers open country and nests on rock cliffs in river gorges and occasionally in timbered mountains. Nests are often scraped on ledges, although old stick nests of ravens or others raptors also will be used. Prairie Falcons feed on a variety of prey including ground squirrels and prairie dogs, lizards, and birds, especially those that are ground dwelling. Immature birds eat large quantities of insects (Ehrlich, 1988). Prairie Falcons are occasionally observed on the refuge during the winter.

Golden Eagle (*Aquila chrysaetos*) - Golden Eagles are found in a variety of habitats in the western U.S. including mountainous areas, canyons, shrubland and grasslands. Golden Eagles prey primarily on mammals such as rabbits and large rodents. Golden Eagles feed mostly on food which they catch, although they will consume carrion. These large raptors are still subject to illegal shooting due to the erroneous belief that they are a serious threat to ranch animals (Ehrlich, 1988). It is uncommon to spot a Golden Eagle on the refuge.

Barn Owl *(Tyto alba)* - This medium sized owl nests in buildings (church steeples, attics, platforms in silos, barns, wooden water tanks, duckblinds), caves, crevices on cliffs, burrows, and hollow trees (AOU 1983). Dense grass fields are the chief foraging habitat, including saltmarsh, wet meadows, lightly grazed pastures, grass hayfields, and recently abandoned agricultural fields (Colvin, 1980, 1984). Population declines have been attributed mainly to commercial development of farmland, reduction in the dairy and sheep industry, conversion to intensive row-crop farming, and decline in the number of farms and old farm structures resulting in a loss of nest sites and important high quality foraging habitat. Foraging habitat availability appears to limit numbers most significantly (Colvin et al., 1984; Colvin, 1985; Rosenburg, 1986). Barn Owls are present, but because they are nocturnal they are uncommonly seen on the refuge.

Burrowing Owl (*Athene cunicularis*) - Burrowing Owls are found throughout grasslands and deserts in western portions of North America. Burrowing Owls typically nest in vacated prairie dog burrows. Urban development, conversion of pasture to cropland, and cultivation of grasslands limit Burrowing Owl populations through the destruction of nesting habitat. Elimination of burrowing rodents through control programs has been identified as the primary factor in the recent and historical decline of Burrowing Owl populations. Burrowing Owls are rarely seen on or near the refuge.

Bell's Vireo (*Vireo bellii*) - This small passerine nests in dense brush, shrubs, or low trees, usually averaging about one meter above ground (AOU, 1998). Declines in the population may be related to loss of riparian habitat (USFWS, 1988), particularly in western portions of its range. Urban development, water diversion, flood control projects, grazing, and the spread of agriculture have destroyed much western nesting habitat. This species is also impacted by brood parasitism by Brown-headed Cowbirds (*Molothrus ater*). Breeding habitat restoration and cowbird control has led to population recovery in limited areas. The Bell's Vireos are uncommon on the refuge.

Long-billed Curlew (*Numenius americus*) - Long-billed Curlews disappeared from large portions of their range during the late nineteenth and early twentieth centuries (Andrews and Righter, 1992; Stewart, 1975) when populations of many shorebirds were decimated by uncontrolled hunting. With protection, the populations of most shorebirds breeding in the arctic recovered. The Long-billed Curlews nest in grasslands of central and western North America, where habitat destruction and other factors have not allowed for a sustained population recovery. Long-billed Curlews prefer native short-grass prairie for nesting, but also occupy grazed mixed-grass communities and scrub prairie (Stewart, 1975). In general, breeding Long-billed Curlews are most numerous on the western Great Plains from eastern New Mexico and the Texas Panhandle north to portions of Montana and Alberta, and from Utah into eastern Oregon. Breeding bird survey data indicate that Long-billed Curlew populations are declining in the High Plains and the western Great Plains. It is uncommon to find Long-billed Curlews on the refuge.

Western Snowy Plover (*Charadrius alexandrinus nivosus*) - The Western Snowy Plover is a bird of the alkali and saline flats of the western states. Nest sites of the Western Snowy Plover typically occur in flat, open areas with sandy or saline substrates; vegetation is usually sparse or absent (USFWS, 1993). The majority of Western Snowy Plovers are site faithful, returning to the same site in subsequent breeding seasons. Birds often nest in exactly the same locations as the previous year (USFWS, 1993). The Western Snowy Plover winters in habitats similar to those used during the nesting season. Western Snowy Plovers forage on invertebrates in the wet salt pans, spoil sites, and along the edges of salt marshes and salt ponds. It is rare to see a Western Snowy Plover on the refuge.

Table 2 - Federal Candidate Species and State Species of Special Concern occurring in Washita NWR and surrounding areas.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
Tadaria brasiliensis	Mexican Free-tailed Bat	N/A	SS2
Cynomys ludovicianus	Black-tailed Prairie Dog	N/A	SS2
Reitrodontomys humulis	Eastern Harvest Mouse	N/A	SS2
Bassariscus astutus	Ringtail	N/A	SS2
Phrynosoma cornutum	Texas Horned Lizard	N/A	SS2
Holbrookia maculata	Earless Lizard	N/A	SS2
Rhinocheilus lecontei tessellatus	Texas Longnosed Snake	N/A	SS2
Tympanuchus pallidicinctus	Lesser Prairie-chicken	Candidate	N/A
Buteo regalis	Ferruginous Hawk	N/A	SS1
Numenius americanus	Long-billed Curlew	N/A	SS1
Falco mexicanus	Prairie Falcon	N/A	SS1
Aquila chrysaetos	Golden Eagle	N/A	SS1
Vireo bellii	Bell's Vireo	N/A	SS2
Athene cunicularia	Burrowing Owl	N/A	SS2
Tyto alba	Barn Owl	N/A	SS2
Buteo swainsonii	Swainson's Hawk	N/A	SS2
Charadrius alexandrius nivosus	Western Snowy Plover	N/A	SS2

SS1 - a native species with a presently stable or increasing population that current evidence indicates is especially vulnerable to extirpation because of limited range, low population, or other factors.

SS2 - a native species identified by technical experts as possibly threatened or vulnerable to extirpation but for which little, if any, evidence exists to document the population level, range, or other factors pertinent to its status.

3.3.6 Species of Special Emphasis

Several grassland bird species which occur on the refuge have been identified as Priority Bird Populations by the PIF program for the Rolling Red Plains physiographic region. These species are indicators of the condition of the grassland and wetland systems within this region (USGS, 2000). Their populations have been emphasized as a priority for monitoring. These include several species mentioned previously such as Bell's Vireo with the addition of the following species:

Lesser Prairie-chicken - The Lesser Prairie-chicken occupies arid short-grass prairies interspersed with shinnery oak and sand sagebrush brushlands (Oberholser, 1974; Sutton, 1967). This species was formerly abundant within this range, but has dramatically declined during the twentieth century. It is presently found in isolated regions of southwestern Kansas, southeastern Colorado, eastern New Mexico, western Oklahoma, and northwestern Texas. Loss of habitat is responsible for most of the Lesser Prairie-chicken's decline, especially conversion of native prairie to cropland. Brush removal within remaining prairies is also a factor, as the oak and sagebrush provide important food and cover (Sutton, 1967). Recent increases in this species may be the result of conversion of cropland to grassland under the U.S. Department of Agriculture's Conservation Reserve Program. This program provides farmers with subsidies to convert unsuitable cropland to grassland. There have been no recent sightings of this species on the refuge.

McCown's Longspur (*Calcarius mccownii*) - The McCown's Longspur prefer habitats that include sparse short-grass plains, plowed and stubble fields, with areas of bare or nearly bare ground (AOU 1983). Population declines may be attributed to habitat destruction due to agricultural conversion of native prairie habitat (With, 1994). In some studies, about half of all nests were lost to predators, such as the thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*). This species is rarely seen on the refuge.

Scissor-tailed Flycatcher *(Tyrannus forficatus)* - The Scissor-tailed Flycatcher is the Oklahoma state bird, and inhabits open country (savannas, grasslands, croplands, pastures, gardens, parks, golf courses, and urban areas) with scattered trees and shrubs for perching and nesting. The species nests principally in isolated trees or shrubs, but may utilize man-made structures, including telephone poles, streetlights, television antennas, power transformers, and windmills. Threats to the species are minimal as it readily adapts to open habitats created by humans. Brush eradication in portions of the breeding range could reduce nesting habitat (Nolte and Fulbright, 1996). Nests are occasionally parasitized by Brown-headed Cowbirds, but cowbird eggs are typically ejected (Regosinn 1994). Scissor-tailed Flycatchers are abundant on the refuge.

Cassin's Sparrow (*Aimophila cassinii*) - During the breeding season, Cassin's Sparrows inhabit short-grass prairies mixed with scattered shrubs. Their population numbers are known to experience considerable annual fluctuations in abundance, primarily in response to changes in precipitation levels. In the southwestern deserts, they are generally most numerous during wetter years, but become scarce during droughts. Because of their inconspicuousness in winter, limited data exists to indicate trend estimates. Cassin's Sparrows are uncommon on the refuge some years and virtually absent in other years.

PIF Priority Species - In addition to those species identified specifically for the Rolling Red Plains physiographic region, there are several nongame landbird species that have been prioritized for the larger central mixed-grass prairie region. Through the PIF prioritization process, scores were determined for relative abundance, breeding and nonbreeding distribution, threats to breeding and nonbreeding areas, population trends, and area importance using various criteria established for these categories. Depending on the scores, each species was ranked and placed in tier groups from Tier I, having the highest priority for the region, and Tier II, being the next group for prioritization. Species in subsequent tiers have already been protected as Species of Conservation Concern listed birds, (Tier III), and those species protected as federally listed threatened and endangered species (Tier IV) (Carter et al., 2000). The bird species identified for the central mixed-grass prairie region are listed in Table 3. A complete listing of threatened and endangered species can be found in Appendix E.

Table 3 - Priority Species of Bird Conservation Region 19, Central Mixed-Grass Prairie

Tier I	Tier II
Trumpeter Swan [R]	American White Pelican [C]
Mississippi Kite*[C]	Northern Harrier*[A]
Swainson's Hawk*[C]	Ferruginous Hawk [U]
Greater Prairie-chicken [N]	Northern Bobwhite*[C]
Lesser Prairie-chicken [R]	American Avocet [U]
Black Rail [N]	Upland Sandpiper [U]
Snowy Plover*[R]	Yellow-billed Cuckoo*[C]
Piping Plover [N]	Barn Owl*[U]
Wilson's Phalarope [U]	Burrowing Owl [R]
Scissor-tailed Flycatcher*[A]	Short-eared Owl [O]
Bell's Vireo*[U]	Red-headed Woodpecker*[U]
Black-capped Vireo [N]	Western Kingbird*[A]
Cassin's Sparrow [U]	Loggerhead Shrike*[U]
Dickcissel*[A]	Lark Sparrow [C]
Northern (Baltimore) Oriole*[C]	Lark Bunting [O]
	Grasshopper Sparrow*[U]
	Blue Grosbeak [C]
	Painted Bunting [U]
	Eastern Meadowlark*[C]
	Orchard Oriole*[U]
	Bullock's Oriole [R]

* Known to nest in the area
[A] Abundant - a common species which is numerous in the area
[C] Common - certain to be seen in suitable habitat
[U] Uncommon - present, but not certain to be seen
[O] Occasional - seen only a few times during a season
[R] Rare - seen at interval of two to five years
[N] Not observed on the refuge
Bold = species of special emphasis per PIF

3.4 Research

Baseline plant collection studies are underway on Washita NWR, conducted by Southwestern Oklahoma State University (SWOSU). A Johnsongrass distribution study on Washita is being conducted by an undergraduate student from SWOSU, and a salt cedar distribution study on Washita is being conducted by a professor from SWOSU and a volunteer.

Other research priorities are the continued monitoring of selected birds such as the Least Tern, Bald Eagle, and waterfowl on the refuge; population surveys of resident wildlife such as the white-tailed deer; and the continued research on the effectiveness of habitat management techniques such as prescribed burning and invasive species control.

3.5 Climate

The refuge was chosen as a site to install a Mesonet weather station. The Mesonet is a statewide environmental monitoring network developed through the cooperative efforts of Oklahoma State University and the University of Oklahoma. This is a world-class weather observation system which came about through many years of work involving the Division of Agricultural Sciences and Natural Resources and the College of Arts and Sciences at Oklahoma State University, and the College of Geosciences at the University of Oklahoma.

The climate of Washita NWR and the surrounding region is semiarid. Average annual precipitation is 26 inches, most of the precipitation occurring between April and October (Figure 12 shows average temperatures and precipitation in Butler, Oklahoma, as recorded by Qwikcast.com). Situated at elevations ranging from approximately 1,640 to 1,740 feet msl, the refuge has hot summers with temperatures exceeding 100 degrees Fahrenheit during the day and averaging 55 to 65 degrees F° at night. Winters are mild with an occasional surge of cold air causing a drop in temperature. Winds are commonly from either the south or southwest and occasionally from the north during the winter. The climate includes periodic droughts and floods. Heavy rains usually follow the droughts, resulting in soil erosion from the flooding. Wind erosion can be prevalent in the spring.

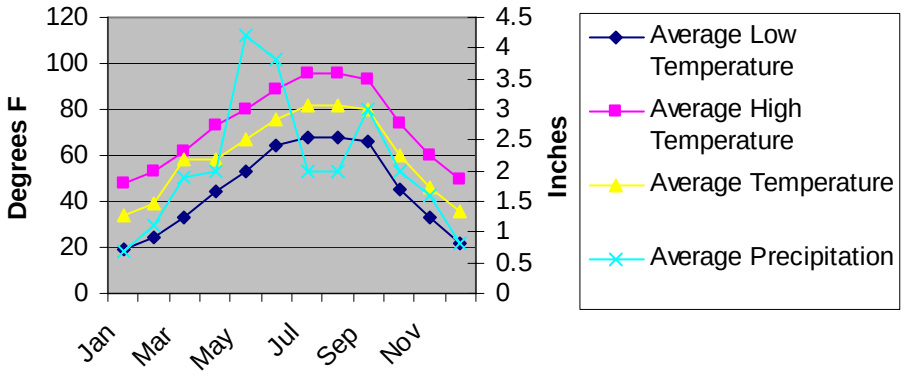

Figure 12. Butler, Oklahoma Weather Averaged from a Thirty-year Record

3.6 Physiography

Washita NWR is located on the north end of Foss Reservoir. The Washita River winds through the refuge for approximately six miles before dropping its load of silt and nutrients into Foss Reservoir. The waters of the reservoir are used for municipal water supply, wildlife, and recreation.

The original plains were formed by glacial outwash from the Rocky Mountains. This deposition is of great depth in many locations and gives rise to the deep sandy soils prevalent in this area. High volumes of runoff late in the glacial period cut into more recent deposits. This caused the present topography of rolling hills cut at intervals by deep ravines. Primary land types found within the refuge include river bottoms, reclaimed pastures, lakeshore marsh, open water, and cultivated cropland.

3.7 Geology and Soils

The subbasin in the Washita area is comprised of approximately 3,600 feet of Mesozoic sedimentary rock capped at the surface with Upper Cretaceous (100 million years old) sand, shale, marl, chalk, and limestone of the Comanche series. The Comanche series includes the Trinity group and rock of the Fredericksburg and Washita groups.

There is very little exposed bedrock on the refuge. An occasional outcropping of gypsum may be seen on the hillsides. A few sites containing red shale deposits have also been found. Most of the rock is limited to alluvial gravel deposited by the Washita River. A range site and conditions survey was completed in 1978.

Three types of Permian rock formations are found on the refuge. These include Rush Springs, Cloud Chief, and the Doxy member of the Quartermaster formation. The soils produced from these formations are Carey silt loam, Woodward-Quinlan types, and St. Paul silt loam. These soils are of the same general type with minor differences due to the parent material and are present in the uplands of the refuge. Terrain, low productivity, and susceptibility to erosion render these soils of little value to the farming program.

Sixteen soil types occur on the refuge, as illustrated on a detailed soil map from the Natural Resource Conservation Service (NRCS). Six major range sites occur on the refuge: loamy bottomland, sandy prairie, loamy prairie, shallow prairie, eroded prairie, and deep sand. The majority of the refuge soils are well drained. The soil is a deep sandy loam or sandy silt loam which is highly erodible. The soil is over 10 feet deep in some areas of the refuge and generally overlies a sandy mineral horizon. Sand hills are encountered in some areas on the second terrace level where erosion has removed the topsoil.

The Clairemont-Dale association is the most important soil type on the refuge. These sedimentary deposits make up the bottomland soils by the Washita River and are quite fertile. The major portion of the farming program is conducted on the highly productive Class I and Class II lands. Due to their silt-loam and sandy-loam composition, these soils are susceptible to wind erosion (physiography and soil descriptions summarized from Henson 1978).

3.8 Land Use

Historically, the refuge has been the site of heavy farming or grazing use. Refuge grasslands evolved with grazing by native ungulates as an inherent part of the environment and have been grazed by domestic livestock since the arrival of early settlers.

After settlement occurred in the late 1800s and early 1900s, a large portion of the rangelands of western Oklahoma were plowed and converted to croplands, and cotton was grown commercially. Much of the soil placed under cultivation was not suitable for crop production and considerable erosion occurred.

The area that remained as rangeland was subjected to continuous grazing and stocking rates were heavy, causing steady deterioration of plant vigor and eventually eliminating many of the warm season perennial grasses that are the hallmark of the mixed-grass prairie. The mixed-grass prairie became a disclimax (i.e., a stable community maintained by disturbance) of plant communities resulting from continuous overuse while in private ownership. Present plant associations reflect changes caused by overgrazing, plowing native rangeland, and in a few instances, prairie restoration efforts.

3.8.1 Fishing Area

A popular state fishing site, Foss Reservoir is owned by the BOR and the water level is managed by the FRMCD. The Foss State Park portion of the reservoir and the Washita River are open to the public all year and provide recreational opportunities for thousands of people. The portion of Foss Reservoir within the refuge is closed to boating from October 15 to March 14 each year. The reservoir water surface area fluctuates around 8,800 acres and is managed primarily for public water, wildlife, and recreational (e.g., fishing, boating) use. Approximately 26,000 of the 44,000 annual visitors to the refuge come to the refuge to fish.

3.8.2 Croplands

When the area was first settled, it was a rolling unbroken plain covered with a blanket of bluestem grass. The most fertile soils were located on the uplands. As early farming practices induced erosion, the uplands were denuded of the fertile soil and the bottomlands were transformed into fertile farm fields. These agricultural fields are the cornerstone of the waterfowl management effort on Washita NWR.

Refuge cropland use is planned and implemented to produce more than one million pounds of browse to meet the forage requirements of geese, ducks, and cranes for roughly five months (a total of three million use days). Approximately 2,000 acres of the refuge are planted with winter wheat, winter peas, milo, and various other crops. Green browse and cereal grains are grown to be available to wintering waterfowl and cranes from October through February. White-tailed deer also extensively use these areas for food and cover.

The refuge practices low input sustainable agriculture. The refuge uses herbicides as a component of integrated pest management practices, but more often employs mechanical methods of weed control. A sweep (stubble mulch) plow cuts weeds two to four inches

below the surface without disturbing the soil holding thatch on the surface. Where possible, crops are drilled through the remnants of the previous year's planting, reducing the need to disturb the soil and reducing fuel consumption. Refuge farming is done either by cooperative farmers (private farmers who accept wildlife conservation restrictions on their farm practices in exchange for harvesting crops on the refuge) or by refuge staff.

3.8.3 Forest Lands

Approximately 500 acres of Washita NWR are classified as noncommercial forest lands. This acreage is a combination of planted windbreaks or shelter belts and native woods found along the Washita River and its tributaries. Some of the dominant tree species are hackberry, elms, soapberry, black locust (*Robinia pseudoacacia*), eastern redcedar, eastern cottonwood, bur oak, and black willow. No timber harvest is allowed on the refuge.

3.8.4 Grasslands

The refuge contains approximately 3,200 acres of grasslands including 1,142 acres of native and 2,058 acres of restored grasslands. Dominant grass species include switchgrass, big bluestem, little bluestem, buffalograss, Indiangrass, and sideoats grama. Native forbs include sand sagebrush and yucca. Disturbed grassland is extremely susceptible to invasions by exotic species, particularly Johnsongrass.

Much of the grassland, particularly the restored prairie, is vulnerable to erosion. Management of these areas is aimed toward maintaining a healthy grassland ecosystem with a diversity of plant and animal species. Current management consists of patrolling for livestock trespass and fence and sign maintenance, maintaining firebreaks, and prescribed burning.

3.8.5 Water Management

The Washita River is the major water source in the area. The U. S. Geological Survey operates a gauging station on the Washita River near the McClure Bridge at the northern limits of the refuge (see Figure 13 on page 50). Real-time data from this gauge can be accessed over the internet at http://waterdata.usgs.gov/ok/nwis/uv?07324200. For the 34-year data record at this gauge, the Washita River's minimum observed discharge was 0 (or a dry river) in 1972, the maximum flow was 905 cubic feet per second, measured in 1997. The median flow for the 34-year period was 84 cubic feet per second and the mean flow 148 cubic feet per second. Four tributary creeks within the refuge boundary empty into the river or into Foss Reservoir. The primary purpose of the reservoir is to provide municipal, domestic, and industrial water for the surrounding towns of Clinton, Butler, and Hobart.

The refuge has two established pumping stations (see Figure 13, page 50, for locations) adjacent to the river and a system of pipelines, valves, dikes and water control structures (WCS) designed to enable the staff to manage water levels in the moist soil units. Water levels are manipulated in these units to encourage or discourage certain species of plants and to provide habitat for ducks, geese, cranes, and shorebirds by flooding feeding areas.

In an experimental supplemental use of moist soil areas to be initiated in 2007, the refuge will manage some areas to be suitable as fish nursery habitat in summer months when they are not needed to produce vegetation. The ODWC will provide fry of appropriate native fish species for use in this project.

3.8.6 Water Rights

The refuge has a legal water right to 300 acre-feet of water per year for wildlife management purposes. An agreement with the FRMCD allows for an additional 1,000 acre-feet of water per year to be withdrawn for wildlife management purposes if the water is available (see Appendix I for a copy of the water rights agreement).

3.9 Water Quality

Land adjacent to, and upstream of, the refuge is primarily used for agricultural purposes and oil and gas production. The quality of water coming into the refuge has been routinely monitored since 2003 at the McClure river bridge and at Riverside, a site just south the Highway 33 bridge. Water is tested monthly for parameters including dissolved oxygen, pH, nitrates, ammonia, chloride and orthophosphate. Although elevated levels of some chemicals associated with petroleum production, livestock production, and crop production have been detected, water quality has generally been acceptable. Water quality results since 2003 are summarized in Table 4. Foss Reservoir supplies drinking water for several area communities. Turbidity in the reservoir is fairly high due to the shallowness of the reservoir and the silty nature of river sediments.

Table 4. Water Quality at McClure and Riverside

	Water Temp °C	Dissolved Oxygen mg/L	Percent Oxygen Saturation	pH	Nitrate mg/L	Nitrite mg/L	Ammonia mg/L NH_3-N	Ortho-phosphate mg/L P	Chloride mg/L Cl
6									
Avg.	13	10	90	7.94	0.63	0.12	0.1	0.054	58
Max.	25	15	110	8.25	5.00	1.00	0.3	0.153	75
Min	-2	4	42	7.50	0.00	0.00	00	0.013	15
Riverside									
Avg.	13	8	79	7.93	0.81	0.14	0.2	0.047	51
Max.	25	15	100	8.25	2.00	2.00	0.7	0.093	70
Min.	0	4	50	7.50	0.00	0.00	0.1	0.013	15
Desired		>3		5.5-9.5	<10		<1	<1	<100
Notes: Nitrite has only been measured since August 2005, other parameters measured monthly since July 2003, with a gap from March to August 2004.									

3.10 Fire Management

The refuge maintains equipment for prescribed burning and for suppression of wildfires on or adjacent to the refuge. The Oklahoma/North Texas Fire Management District Fire Crew, located at Wichita Mountains NWR, assists the refuge in fire operations. Each of the fire team members has attended training on fire behavior and meets the physical fitness requirements for firefighting activities annually. Continuing education and

refresher instruction is provided each year. Washita NWR maintains and employs firefighting equipment including a type six engine.

The bulk of the fire management activities on the refuge involve carefully planned and executed prescribed fires. Prescribed fires are conducted with the assistance and expertise of the Oklahoma/North Texas Fire Management District personnel. Prescribed fire is used to maintain grasslands by controlling brush. Washita NWR has informal agreements with the Butler and Hammon Fire Departments to assist the refuge during wildfires.

3.11 Archaeological, Cultural, and Historical Resources

Archaeological finds on the refuge indicate a prior civilization of nomadic hunters. Bison horns, antlers, stone scrapers, and stone points chronicle the Native Americans' dependence on wildlife resources. Pottery shards, fire rings, and pole marks have also been found. Initial surveys indicated the existence of a village site and burial grounds on Cheyenne Point dating back to the 1500s. Nomads tended to use the same camp site year after year as they traveled through the area. Most activity occurred on the second terrace level overlooking the Washita River. The area was probably also used as a campground by General Custer's 7th Cavalry. Very little excavation has occurred on the refuge. Known or suspected archaeological or cultural sites are protected from disturbance.

3.12 Wildlife-Dependent Recreational Use

The Refuge System Improvement Act recognizes six wildlife-dependent public uses: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. These uses may be offered on refuges when determined to be compatible, and Service policy encourages facilitating these uses when they are compatible. Except where otherwise mandated by law, the Service must determine whether a particular use is compatible with refuge resources before permitting it. Compatibility determinations are normally made by the Refuge Manager in accordance with guidelines developed by the Service. Under these guidelines, a compatible use is defined as one that "will not materially interfere with or detract from the purposes for which the refuge was established." Compatible uses support refuge purposes or may have a neutral effect. In making a compatibility determination, the Refuge Manager must first determine if the use is compatible with refuge purposes strictly on biological grounds. After making such a determination, the Refuge Manager must further consider applicable laws, Service policy, and public opinion (Lee 1986).

The refuge has many features and programs that favor visitation; currently at 44,000 per year. Visitors can access the refuge from Interstate 40, a major east-west highway approximately 28 miles south of the refuge. Refuge headquarters are located five miles west of Butler on State Highway 33, then one mile north and one-half mile west. Several county roads access the northeast and northwest sides of Foss Reservoir, providing visitors excellent opportunities to view wildlife, natural habitats, and refuge management practices on 8,075 acres.

The refuge headquarters have been expanded to provide visitors with a reception area offering brochures, a restroom, and the opportunity to interact with Service employees.

Current publications include bird and mammal leaflets and a refuge brochure (Figure 13 depicts the location of developed features on the refuge).

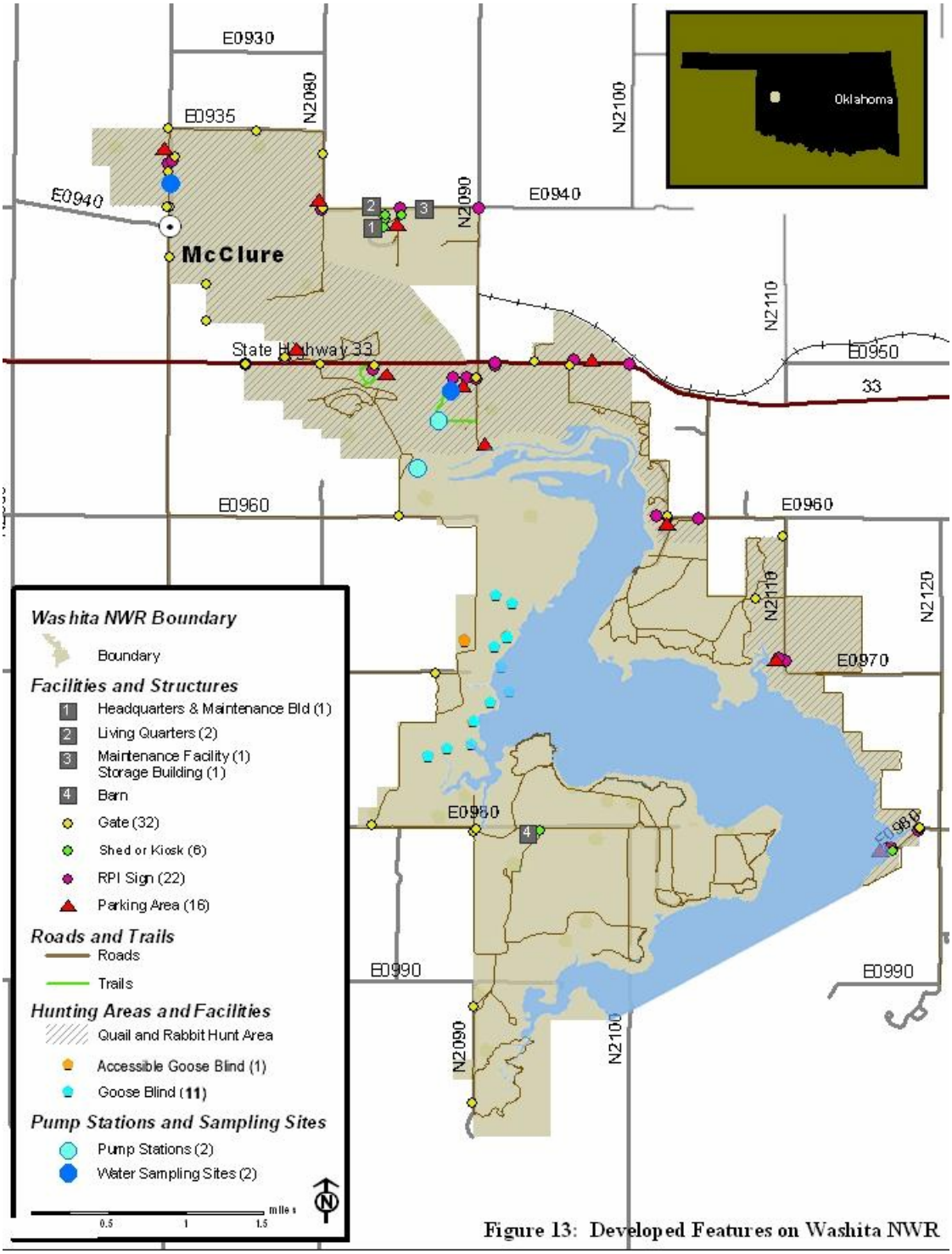

Figure 13: Developed Features on Washita NWR

Several programs and facilities currently in place provide the public with opportunities to enjoy the refuge's resources. The headquarters' overlook provides the public with panoramic views of the Washita River floodplain and adjacent croplands. Interpretive panels with information on the flora and fauna of the area are located at the kiosk and overlook. A signage project currently in development will interpret refuge resources at multiple points accessible by vehicle. Fishing, hunting, hiking, wildlife observation and wildlife photography are other current public uses. Additionally, Foss State Park, adjacent to the refuge, provides public fishing and camping.

3.12.1 Hunting

Limited deer, quail, rabbit, sandhill crane, and goose hunting are acceptable forms of wildlife-dependent public recreation compatible with the purpose for which the refuge was established. These activities offer hunters high quality recreation opportunities on the refuge. The sandhill crane and goose hunts are by reservation only. Crane and goose hunting is allowed on approximately 400 acres during November, December, and January. Hunters are selected via public drawing for the opportunity to participate in one of (up to) seven weekend refuge hunts. Blinds can be reserved for mid-week hunts on a first come, first served basis. Ten blinds are provided with three hunters permitted per blind. Hunters must check out of the refuge hunting area and hunt only from pit blinds. Hunters can shoot at geese or cranes only from assigned blinds except when collecting wounded birds. An accessible blind is also available for persons with mobility disabilities.

A youth hunt for white-tailed deer was implemented in 2001. This hunt was expanded to include a general hunt in 2002. These hunts provide recreation and also reduce the refuge's overabundance of deer.

3.12.2 Fishing

Fishing and boating are permitted on the portions of Foss Reservoir and the Washita River located within the refuge from March 15 through October 14. Fishing from the shoreline is permitted year round except from areas closed to public entry.

3.12.3 Wildlife Observation and Photography

Several facilities currently in place provide the public with opportunities to view the refuge's resources. A kiosk with informative interpretive panels and an accessible wildlife viewing overlook are available near the refuge headquarters, and a wildlife viewing tower is available at Owl Cove Recreation Area to engage the visitors. An observation deck on the Centennial Trial, designated a National Recreational Trail by the Secretary of the Interior in 2006, and nearby photo blind overlook the "Q Field" moist soil unit and offer opportunities to closely observe wildlife.

Hunting areas of the refuge are closed to general public access for a short time during the fall and again in late winter to accommodate the hunting programs. When not in use by hunters, blinds in open areas of the refuge are available to photographers and wildlife watchers.

3.12.4 Environmental Education and Interpretation

The refuge provides environmental education programs and outreach efforts to the local community. The refuge staff encourages and solicits environmental education opportunities for area schools and universities. Local grade school classes complement their environmental education curriculum with a visit to the refuge. Girl Scout and Boy Scout groups also rely on the refuge to meet their environmental education needs.

3.13 Socioeconomic Setting

Washita NWR is located in Custer County (population 25,230 [populations are estimates by the U.S. Census Bureau for 2003 or 2004]), approximately 26 miles northeast of Elk City (population 10,510) and approximately 25 miles northwest of the city of Clinton (population 8,364). Oklahoma City, with a population of 523,303, is aproximately 100 miles east of the refuge. Several small towns are within 60 miles of the refuge.

The presence and operation of Washita NWR has a definite socioeconomic effect on the surrounding communities, especially the towns of Butler, Hammon, Elk City, and Clinton. Refuge employees live in and/or shop in these four towns. The refuge buys many of its supplies locally. The refuge's annual budget is approximately $550,000 and the majority of this money is recycled in the local economy through the refuge staff, purchases with local stores for supplies, and contracts for local labor.

Refuge waters receive approximately 26,000 fishing visits each year. This figure includes many out of state visitors, especially from the Texas Panhandle. Refuge hunting programs attract approximately 500 visitors annually. Local community businesses including restaurants, grocery stores, bait and tackle shops, motels, service stations, and sporting goods stores all profit from these visitor services programs.

There are currently six gas producing wells on Washita NWR. Mineral rights for the majority of the refuge were retained by the previous landowners. The refuge is located in a portion of the Anadarko Basin, a large natural gas resource.

As required by the Refuge Revenue Sharing Act of 1978, Public Law 95-469, the Service annually compensates the county for federal lands taken off of county tax rolls. The revenue sharing check is calculated using a formula taking into account the land's appraised value and money available under the program. Checks are delivered annually to Custer County for the 14 acres of land that Washita NWR actually owns in fee title. The BOR still owns the remaining land.

3.14 Population

The U.S. Census Bureau estimated the State of Oklahoma population at 3,523,553 in 2004. Among the 50 states it ranked as the 29th most populous. By 2025, it is projected to have a population above four million people. The 2004 population estimate for Custer County is 25,230. This ranked the county 36th among Oklahoma's 77 counties.

The 2000 census included a separate non-racial category of Hispanic or non-Hispanic. Individuals could indicate their status as Hispanic or not while also indicating their membership in a racial group such as White, Black/African American, or Asian. Nine percent of the population reported Hispanic descent. The 2000 census introduced a separate racial category of "Two or More Races."

The 2005 census estimates report that 88 percent of the population of Custer County is White. The remaining 12 percent of the population is composed of Native Americans (6 percent), Blacks or African Americans compose (3 percent), Individuals of Two or More Races (2 percent), and Asian Americans (1 percent).

3.15 Regional Economic Profile (Growth)

The total personal income in Custer County from 2000 through 2003 averaged $544,252,000. The average per capita income generated from 2000 through 2003 was $21,354. Farm earnings amounted to 1.9 percent of all earnings reported from 2000 to 2003.

Table 5 - Custer County Personal Income Accounts Data, 2000 to 2003.

Custer County	2000	2001	2002	2003
County population (number of persons)	26,061	25,623	25,097	25,207
Per capita personal income	$20,424	$21,252	$21,206	$22,534
Personal income	$532,261,000	$544,529,000	$532,206,000	$568,010,000
Nonfarm earnings[1]	$350,853,000	$357,423,000	$353,660,000	$375,207,000
Farm earnings[1]	$3,863,000 (0.7%)	$2,545,000 (0.5%)	$3,084,000 (0.6%)	$19,065,000 (3.4%)
[1]Listed as earnings by place of work (only wages and salaries, adjustments to wages and salaries and proprietors' earnings)				

U.S. Bureau of Economic Accounts

Most employment in Custer County is in the private sector. Major employment categories in the county broke down as follows in 2000:

- 25 percent services;
- 19 percent government (federal, state and local);
- 18 percent retail trades;
- 10 percent manufacturing;
- 9 percent farming and agricultural services;
- 6 percent financial services and real estate;
- 3 percent construction;
- 5 percent mining;
- 3 percent transportation and public utilities;
- 3 percent wholesale trades (Barta et al., 2002).

4.0 WASHITA NWR ADMINISTRATION

4.1 Refuge Staffing and Facilities

Current staffing at Washita/Optima NWR Complex consists of seven permanent full time (PFT) positions:[1]

•	Refuge Manager	GS-12	PFT
•	Wildlife Refuge Specialist	GS-11	PFT
•	Wildlife Biologist	GS-9	PFT
•	Administrative Technician	GS-7	PFT
•	Maintenance Worker	WG-8	PFT
•	Maintenance Worker	WG-8	PFT
•	Maintenance Worker	WG-7	PFT

The refuge's headquarters and administrative offices currently consist of a visitor contact station/administration office and a maintenance building.

Signs directing visitors to the refuge headquarters are located at the south end of Foss Reservoir Dam, at the intersection of State Highways 44 and 33, and at the intersection of State Highway 33 and County Road N 2090. Refuge boundaries are posted approximately every one-quarter mile. There are approximately 30 miles of exterior boundary fence and five miles of interior fencing.

4.2 Memoranda of Understanding and Other Agreements

Memoranda of Understanding (MOU) provide the framework for cooperation between branches of the government and between the government and nongovernmental organizations (NGO). MOU can be used to delineate management and jurisdictional responsibilities and allow for more efficient use of limited resources (MOU and other agreements can be reviewed in Appendix I).

4.2.1 Current Agreements

The refuge has had Cooperative Agreements with the BOR regarding the management of wildlife resources for the refuge dating from the inception of the reservoir in 1961. Most of the refuge, except for some administrative land, is an overlay of property originally acquired by the BOR.

The refuge initiated a MOU with the Custer County Sheriff's Office and Foss State Park in 2005 to provide for emergency law enforcement support among the agencies.

There is a Cooperative Agreement between the refuge and two cooperative farmers. The cooperative farmers currently cultivate approximately 925 acres of refuge farmland, while

[1] The Refuge Workforce Plan for the Southwest Region of the FWS, currently under development, may result in decreases in staffing at Washita NWR. Such decreases could delay completion of the refuge management objectives identified in Chapters 7 and 8 of this plan.

refuge staff cultivates the remaining 1,060 acres, although the amount cultivated by cooperative farmers changes from season to season with the availability of farmers willing to cultivate land under the restrictions necessary to protect refuge resources.

The refuge has agreements with the local volunteer fire departments along with partnerships and working relationships with a variety of organizations such as Custer County, ODWC, NRCS, SWOSU, Oklahoma Department of Transportation (ODOT), etc., which are not official MOU but provide the foundations that allow cooperative efforts on a variety of projects.

4.2.2 Future Agreements

The refuge will continue to enhance relationships with private landowners, conservation organizations, educational institutions, and other government agencies. This could result in the development of conservation agreements or other options for land protection, habitat enhancement and restoration, and opportunities for wildlife research.

4.3 Other Land Management

Lands bordering Foss Reservoir outside of Washita NWR are managed for public recreation by the State of Oklahoma as Foss Lake State Park. This park includes approximately 1,750 acres of land and 7,000 acres of reservoir surface. Recreational activities offered include hiking, biking, horseback riding, hunting, fishing, boating, swimming and camping. Facilities include 110 RV campsites, 42 tent sites, an equestrian camp, picnic areas, group picnic shelters, comfort stations with showers, lighted boat ramps, boat storage, boat rentals, playgrounds, swimming beaches, a marina, and a floating restaurant.

The other main land management activity on the refuge is natural gas production. There are currently six gas producing wells on the refuge owned by four different companies.

4.3.1 Utility Lines

Three companies operates electric transmission lines that cross the refuge: Kiwash Electric Cooperative Inc., Western Farmers Electric Cooperative Inc., and American Electric Power - Public Service Company of Oklahoma. Two gas transmission pipelines also cross the refuge. These are operated by OG&E Enogex.

4.3.2 *Road Rights-of-Way*

The right-of-way for State Highway 33 crosses the refuge. Rights-of-way for three county roads, totaling 6.3 miles in length border the refuge boundary. Under the Cooperative Agreement between the BOR and the Service, the BOR is responsible for all easements on the refuge.

5.0 OPTIMA NWR RESOURCES

Optima NWR was established in 1975 under provisions of the Fish and Wildlife Coordination Act, by agreement between the Department of the Interior and the Corps. Optima NWR is located in southeastern Texas County, Oklahoma, near the center of the Oklahoma panhandle. The 4,333 acre refuge is made up of grasslands and wooded bottomlands on the Coldwater Creek arm of the Corps Optima Reservoir Project. Outlet gates on Optima Dam, located one-half mile downstream from the confluence of the North Canadian (Beaver) River and Coldwater Creek, were closed in 1978. The reservoir's impoundment rate has never reached projected figures (7,040 acres). Currently, the closest shoreline is located approximately one-half mile from the refuge boundary.

The refuge is approximately 14 miles east-southeast of Guymon, Oklahoma. Western Oklahoma is located within the Central Flyway. This location makes the refuge important in partially relieving the critical shortage of protected habitat for neotropical migrant birds in western Oklahoma. The Optima NWR complements the Washita, Buffalo Lake, Tishomingo, and Salt Plains NWRs in providing valuable habitat.

5.1 Vegetation

Optima NWR is located in the mixed-grass prairie region of the Oklahoma Panhandle. The refuge's flat to rolling terrain consists primarily of creek bottom, adjoining bluffs, and uplands. South facing slopes have heavy stands of sand sagebrush. Dominant native grasses include sand bluestem (*Andropogon hallii*), little bluestem, silver beardgrass (*Bothriochloa laguroides*), sideoats grama, sand dropseed (*Sporobolus cryptandrus*), blue grama (*Bouteloua gracilis*), buffalograss, vine-mesquite (*Panicum obtusum*), and Indiangrass. Riparian areas are characterized by tall eastern cottonwood trees and areas dominated by exotic salt cedar. Figure 14 depicts refuge vegetation classes.

5.1.1 Native Prairie

A mixture of short and mid-grass species comprise the vegetation on approximately 1,500 acres of the grasslands. Approximately 1,175 acres of this grassland is native prairie. There is a preponderance of little bluestem, switchgrass, sideoats grama, and blue grama. Other grass species include Indiangrass, sand bluestem, sand dropseed, silver beardgrass, and buffalograss. Native shrubs include sand sage.

5.1.2 Sagebrush Habitat

There are approximately 1,925 acres of sagebrush habitat on the refuge. Plant species associated with this habitat include sand sage and bluestem grasses.

5.1.3 Woodland

Approximately 540 acres of the refuge are in woodland including, but not limited to, the following plant species: eastern cottonwood, mulberry (*Morus sp.*), black willow, and hackberry.

5.1.4 Wetlands

The refuge water management is very limited. Coldwater Creek passes lengthwise through the refuge. This creek is now a mostly dry intermittent streambed, except for the extreme eastern mile which has some small semi-permanent wetlands.

There are approximately five acres of wetlands. Vegetation along wetland areas includes sedges, black willow, buttonbush (*Cephalanthus occidentalis*), and eastern cottonwood. Various species of aquatic plants such as dock (*Rumex spp.*), pondweed, smartweed, common cattail (*Typha latifolia*), southern cattail (*T. domingensis*), rushes, bulrush, and sedges grow in seasonally flooded and permanent wetlands when moist soil conditions are conducive for seed germination.

5.1.5 Introduced Grasses-Cropland

Approximately 350 acres are planted with winter wheat and elbon rye.

5.1.6 Exotics and Weeds

Exotic and weed species include salt cedar, Chinese elm, Russian thistle, kochia (*Kochia scoparia*), cheat grass, and Johnsongrass. Russian thistle, kochia, and Johnsongrass are the major pests throughout the entire refuge and surrounding area. They occupy most of the refuge that was previously farmed, grazed, or otherwise disturbed.

5.2 Wildlife

Optima NWR offers a diverse assortment of wildlife species. Birds comprise the majority of species, but a wide variety of mammals may also be seen as well as a variety of reptiles and insects. While there is no official list of invertebrates, they are present in great enough numbers to provide forage for birds and other animals. It should be noted that wildlife inventory data is limited; wildlife surveys, such as deer spotlight counts, breeding bird surveys or raptor nest counts, are conducted only irregularly.

5.2.1 Mammals

Resident mammal species commonly seen on the refuge include white-tailed deer and eastern cottontail. Mammals that are common but seen less often because of their habits are coyote, black-tailed jackrabbit (*Lepus californicus*), raccoon, American badger (*Taxidea taxis*), and porcupine.

5.2.2 Birds

Common waterfowl species seen at Optima Reservoir include the Mallard, Canada Goose, Green-winged Teal, Blue-winged Teal (*Anas discors*), and American Coot.

Other commonly seen species include the Great Blue Heron, Sandhill Crane, American White Pelican, Double-crested Cormorant, Black-crowned Night Heron (*Nycticorax nycticorax*), and Grebes (*Podiceps spp.*).

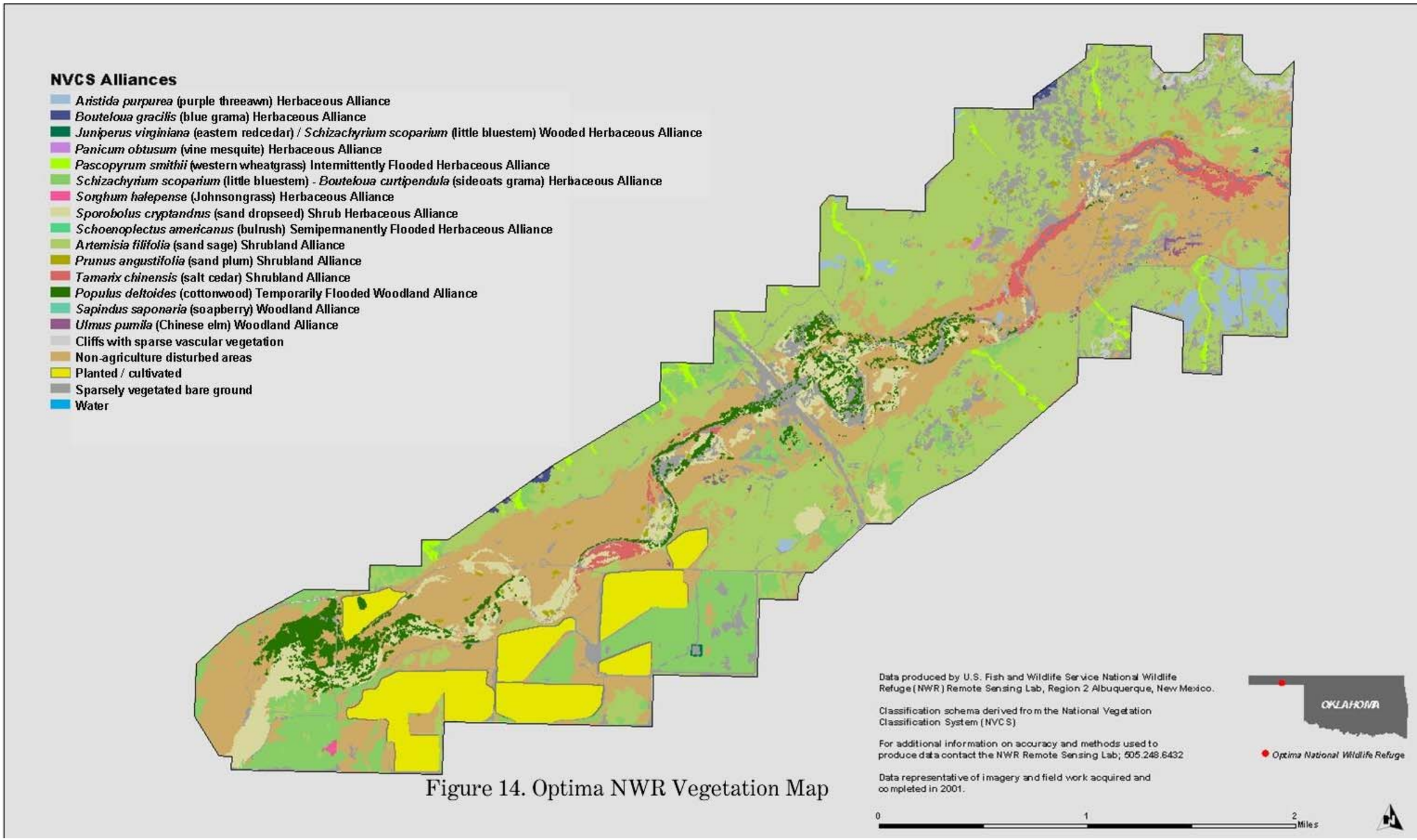

Figure 14. Optima NWR Vegetation Map

Raptors that frequent Optima NWR include the Great Horned Owl (*Bubo virginianus*), Red-tailed Hawk, Ferruginous Hawk, Northern Harrier, and American Kestrel.

Resident game bird species commonly seen on the refuge include the Rio Grande Turkey, Ring-necked Pheasant (*Phasianus colchicus*), Northern Bobwhite, and Scaled Quail (*Callipepla squamata*).

5.2.3 Reptiles and Amphibians

Many species of reptiles and amphibians can be seen on the refuge. They include, but are not limited to, snakes such as the prairie rattlesnake (*Crotalus viridis*) and bullsnake, and lizards such as the six-lined racerunner. Also present are bullfrogs, plains leopard frogs, New Mexico spadefoot toads (*Scaphiopus multiplicatus*), and snapping turtles.

5.2.4 Fish

The fluctuating, ephemeral waters of Optima Reservoir support only fish adapted to periodic dessication, very low dissolved oxygen and varying salinity, such as mosquito fish.

5.2.5 Invertebrates

While invertebrates may outnumber all other species on the refuge combined, they are rarely the focus of attention. Damselflies and dragonflies (Odonata) are common, as well as mosquitoes and midges (Diptera). Beetles (Coleoptera) and backswimmers (Hemiptera) are present in the small ponds on the east side of the refuge. Aquatic species that are common include the larvae of many of the previously mentioned insects as well as crayfish, water fleas (Crustacea), and snails and bivalves (Mollusca). Many of these species serve as the forage to support the wildlife on the refuge.

5.3 Endangered, Threatened, and Species of Concern

The refuge provides potential habitat for several federally listed threatened, endangered, and candidate species. As defined by the ESA, an "endangered species" is any species which is in danger of extinction throughout all or a significant portion of its range; a "threatened species" is any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Candidate species are those for which insufficient information is currently available for listing as threatened or endangered. Some species inhabit the refuge on a regular or seasonal basis while others are migrants that are infrequently sighted on the refuge.

No Federally listed endangered or threatened species regularly occur on the refuge. Interior Least Terns are periodically observed during the spring and summer months on Optima Reservoir approximately one mile from the refuge boundary. Bald Eagles occasionally utilize the refuge and Optima Reservoir during winter months. The state protected Texas horned lizard has been confirmed in Texas County and may exist on Optima NWR.

5.3.1 Bald Eagle

The Bald Eagle was listed as endangered on March 11, 1967. The population's dwindling numbers were largely due to pesticide contamination, loss of riparian habitat, and human disturbance. On August 11, 1995, the Bald Eagle was down listed from endangered to threatened status in the majority of the contiguous U.S., including Oklahoma, due to nationwide recovery efforts. Bald Eagles are occasional visitors to the refuge, where cottonwoods provide suitable roost sites.

5.3.2 Interior Least Tern

The Interior Least Tern was listed as endangered on May 28, 1985. This waterbird nests in colonies on the ground, typically on sites that are sandy and relatively free of vegetation. All subspecies of the Least Tern apparently were abundant through the late 1880s, but were nearly extirpated by market hunters in the 1890s and early 1900s. These hunters sought the Least Tern's delicate plumage, used on fashionable hats at that time. After the signing of the 1918 Migratory Bird Treaty Act, commercial harvesting became illegal and the species began to increase through the 1940s. However, human development and use of tern nesting beaches for housing and recreation subsequently led to another rapid population decline. In the interior United States, river channelization, irrigation diversions, and the construction of dams contributed to the destruction of much of the Interior Least Tern's sandbar nesting habitat. By the mid 1970s, Interior Least Tern populations had decreased by more than 80 percent from the 1940s. Interior Least Terns are uncommon in the vicinity of the refuge during the summer, but have nested along the shores of the Optima Reservoir.

5.3.3 Whooping Crane

The Whooping Crane (*Grus americana*) was listed as endangered on March 11, 1967. Once widespread in North America, by 1941 the species had declined to about 16 individuals in a single wild flock that migrated between Canada and coastal Texas (Lewis 1995). The Whooping Crane has begun a slow but steady recovery. As of December 13, 2006, Crane numbers had increased to 237 (192 adults and 45 chicks) in the wild flock that migrates between Wood Buffalo National Park in Canada and Aransas NWR in coastal Texas. A resident, non-migratory flock in Florida, an experimental eastern migratory population and captive birds bring the species' total to 518 (USFWS 2006). The species' historic wintering grounds included southwestern Louisiana, the Gulf Coast of Texas, interior west Texas, the highlands of northern Mexico, and Atlantic coastal areas of New Jersey, Delaware, South Carolina, and Georgia (DeHoyo et al., 2000). During migration they feed and roost in a wide variety of habitats including croplands, large and small freshwater marshes, the margins of lakes and reservoirs, and sandbars in rivers. Several factors contributed to the historic decline of the species, including the draining of crucial wetland habitat, conversion of their habitat to rice culture (Allen, 1952), coastal and marine pollution, illegal hunting, disease, predation, collision with utility lines, loss of genetic diversity within the population, and vulnerability to natural and human caused disturbances. At least one Whooping Crane has been observed at Optima Reservoir.

5.3.4 Flora

No state or federally listed threatened or endangered flora species are known to occur on Optima NWR.

Table 6 - Known or Suspected Federally Listed Threatened and Endangered Fauna Species of Optima NWR, Optima Reservoir, and Texas County.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
Haliaeetus leucocephalus	Bald Eagle	Threatened	Threatened
Grus americana	Whooping Crane	Endangered	Endangered
Sterna antillarum athalassos	Interior Least Tern	Endangered	Endangered

5.3.5 Species of Concern

Several species have been proposed as candidates for protection under the ESA or have Special Status in Oklahoma.

Category I - any native species with a presently stable or increasing population that current evidence indicates is especially vulnerable to extirpation because of limited range, low population or other factors.

Category II - any native species identified by technical experts as possibly threatened or vulnerable to extirpation but for which little, if any, evidence exists to document the population level, range or other factors pertinent to its status.

Declines may be related to loss and fragmentation of suitable habitat, increasingly large areas being cultivated for crops, drought, loss of playa lakes, lack of natural fire regime, and the replacement of native grasses with exotic grasses. The following Oklahoma Species of Special Concern have been documented to occur on the refuge or surrounding area, or could occur on the refuge but are undocumented.

Black-tailed Prairie Dog - Prairie dogs live in short-grass and mid-grass prairies and grass-shrub habitats (Finch, 1992). The historic range of black-tailed prairie dogs covered approximately 100 million acres and extended over 12 states, throughout the Great Plains from southern Canada throughout most of western United States to Northeastern Mexico. Prairie dogs have been reduced to less than one percent of their original range due to poisoning by private landowners, plague, and shooting. What remains is fragmented into remnants of various sizes. This species is considered a critical link or keystone species, one that significantly influences the distribution, abundance, and/or diversity of other species (Kotilar et al., 1999; Finch, 1992). It is also considered an ecosystem regulator as its natural patterns lead to manipulation of soils as well as increases in plant and animal densities. Prairie dogs are helpful to species which benefit from holes, unvegetated areas,

short vegetation, as well as to prairie dog predators (Clark et al., 1982). There are no prairie dog colonies on the refuge at this time.

Texas Horned Lizard - A precipitous decline was documented in populations of the Texas horned lizard in 1992. This species ranges from south central U.S. to northern Mexico and is found in arid and semiarid habitats in open areas with sparse vegetative cover throughout much of Texas, Oklahoma, Kansas, and New Mexico. The Texas horned lizard is easily differentiated from other horned lizard species by the double row of spines on each side of the abdomen. Pesticides, loss of habitat, the displacement of red ants by fire ants, and other causes are suspect in this species decline (ODWC, undated). It feeds heavily on ants and other insects and arthropods as available. Currently, it is state listed as a Species of Special Concern Category 2. The ODWC is tentatively planning a project that will target historical horned lizard sites. There is a closed season on Texas horned lizard in effect now, as listed in the ODWC reptile and amphibian regulations. Texas horned lizards have not been observed on the refuge, but occur in Texas County.

Lesser Prairie-chicken - The Lesser Prairie-chicken occupies arid short-grass prairies interspersed with shinnery oak and sand sagebrush brushlands (Oberholser, 1974; Sutton, 1967). This species was formerly abundant within this range, but has dramatically declined during the twentieth century. It is presently found in isolated regions of southwestern Kansas, southeastern Colorado, eastern New Mexico, western Oklahoma, and northwestern Texas. Loss of habitat is responsible for most the Lesser Prairie-chicken's decline, especially the conversion of native prairie to cultivated fields. Brush removal within remaining prairies is also a factor, as the oak and sagebrush provide important food and cover throughout the year (Sutton, 1967). Recent increases in this species may be the result of conversion of cropland to grassland under the U.S. Department of Agriculture's Conservation Reserve Program. This program provides farmers with land rental subsidies to take unsuitable land out of crop production and convert it to grassland. There have been no recent sightings of Lesser Prairie-chickens on the refuge.

Ferruginous Hawk - The Ferruginous Hawk is primarily found on grassy prairies, dry mesas, and habitats that support many rodents and rabbits. Ferruginous Hawks range over much of the western half of the United States. Conversion of grassland to intensive cultivation has reduced the amount of preferred habitat that is available to the Ferruginous Hawk and has been implicated in the population decline of the species in some areas (Schmutz, 1984; Olendorff, 1993). Agricultural development has restricted the species to areas of greater topographic relief or other areas unsuitable for agriculture (Stewart, 1975). Nest disturbance, the shooting of individuals perched along roadsides, and widespread control of prairie dogs (a vital food) are other factors that may have led to the current decline of this species. The fall migration of Ferruginous Hawks is also tied to prairie dog colony locations, as the Hawks eat young dogs as well as other rodents associated with the towns (Dechant et al., 1999). Ferruginous Hawks are occasional visitors on the refuge.

Prairie Falcon - In the field, Prairie Falcons can be recognized by their large size, distinctive wing shape, and paler color as compared to the similar-sized Peregrine Falcon. This species is found only in western and central North America, Baja, and northern Mexico. Typically found in arid and semiarid plains, this falcon prefers open country and

nests on rock cliffs in river gorges and occasionally in timbered mountains. Nests are often scraped on ledges although old stick nests of Ravens or others raptors will be used. Prairie Falcons feed on a variety of prey including ground squirrels and prairie dogs, lizards, and birds, especially those that are ground dwelling. Immature birds eat large quantities of insects (Ehrlich, 1988). Prairie Falcons are occasionally seen on the refuge.

Golden Eagle - Golden Eagles are found in a variety of habitats in the western U.S. including mountainous areas, canyons, shrubland and grasslands. Golden Eagles prey primarily on mammals such as rabbits and large rodents. Golden Eagles feed mostly on food which they catch, although they will consume carrion. These large raptors are still subject to illegal shooting due to the erroneous belief that they are a serious threat to ranch animals (Ehrlich, 1988). Golden Eagles are seen occasionally on the refuge.

Swainson's Hawk - The Swainson's Hawk is associated with grasslands, sage-steppe, and agricultural habitats. In many areas, Swainson's Hawks have adapted to farmed habitats, nesting in windbreaks and farmstead trees. The Hawks prefer semi-open and open habitats which are best for aerial foraging (hunting while flying). During the nesting season, Swainson's Hawks typically prey on small mammals such as ground squirrels and voles, as well as the occasional small bird or lizard (USDA, 1998). Swainson's Hawks are commonly observed on the refuge.

Barn Owl - This medium sized owl nests in buildings (church steeples, attics, platforms in silos, barns, wooden water tanks, duckblinds), caves, crevices on cliffs, burrows, and hollow trees (AOU, 1983). Dense grass fields are the chief foraging habitat, including saltmarsh, wet meadows, lightly grazed pastures, grass hayfields, and recently abandoned agricultural fields (Colvin, 1980, 1984). Population declines have been attributed mainly to commercial development of farmland, reduction in the dairy and sheep industry, conversion to intensive row-crop farming, and decline in the number of farms and old farm structures, resulting in a loss of nest sites and important high quality foraging habitat. Foraging habitat availability appears to limit numbers most significantly (Colvin et al., 1984; Colvin, 1985; Rosenburg, 1986). Barn Owls are present, but because they are nocturnal, are uncommonly seen on the refuge.

Burrowing Owl - Burrowing Owls are found throughout grasslands and deserts in western portions of North America. Burrowing Owls typically nest in vacated prairie dog burrows. Urban development, conversion of pasture to cropland, and cultivation of grasslands limit Burrowing Owl populations through the destruction of nesting habitat. Elimination of burrowing rodents through control programs has been identified as the primary factor in the recent and historical decline of Burrowing Owl populations. Burrowing Owls are seen occasionally on or near the refuge.

Bell's Vireo - This small passerine nests in dense brush, shrubs or low trees, usually averaging about one meter above ground (AOU, 1998). Declines in the population may be related to loss of riparian habitat (USFWS, 1988), particularly in western portions of its range. Urban development, water diversion, flood control projects, grazing, and the spread of agriculture have destroyed much western nesting habitat. This species is also impacted by brood parasitism by Brown-headed Cowbirds. Breeding habitat restoration and

cowbird control has led to population recovery in limited areas. Bell's Vireos are rarely seen on the refuge.

Long-billed Curlew –Long-billed Curlews disappeared from large portions of their range during the late nineteenth and early twentieth centuries (Andrews and Righter, 1992; Stewart, 1975) when populations of many shorebirds were decimated by uncontrolled hunting. With protection, the populations of most shorebirds breeding in the arctic recovered. However, Long-billed Curlews nest in grasslands of central and western North America where habitat destruction and other factors have not allowed for a sustained population recovery of this species. Long-billed Curlew prefers native short-grass prairie for nesting, but also occupies grazed mixed-grass communities and scrub prairie (Stewart, 1975). In general, breeding Long-billed Curlews are most numerous on the western Great Plains from eastern New Mexico and the Texas Panhandle north to portions of Montana and Alberta, and from Utah into eastern Oregon. Breeding Bird Survey data indicate that Long-billed Curlew populations are declining in the High Plains and the western Great Plains. Long-billed Curlews are seen occasionally on the refuge.

Western Snowy Plover - The Western Snowy Plover is a breeding bird of the alkali and saline flats of the western states. Nest sites of the Western Snowy Plover typically occur in flat, open areas with sandy or saline substrates; vegetation is usually sparse or absent (USFWS, 1993). The majority of Western Snowy Plovers are site faithful, returning to the same breeding site in subsequent breeding seasons. Birds often nest in exactly the same locations as the previous year (USFWS, 1993). The birds winter in habitats similar to those used during the nesting season. Western Snowy Plovers forage on invertebrates in the wet salt pans, spoil sites, and along the edges of salt marshes and salt ponds. It is rare to see Western Snowy Plovers on or near the refuge.

Table 7 - Federal Candidate Species and State Species of Special Concern occurring in Optima NRW and surrounding areas.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
Cynomys ludovicianus	Black-tailed Prairie Dog	N/A	SS2
Reitrodontomys humulis	Eastern Harvest Mouse	N/A	SS2
Bassariscus astutus	Ringtail	N/A	SS2
Mustela frenata	Long-tailed Weasel	N/A	SS2
Vulpes velox	Swift Fox	N/A	SS2
Phrynosoma cornutum	Texas Horned Lizard	N/A	SS2
Holbrookia maculata	Earless Lizard	N/A	SS2
Rhinocheilus lecontei tessellatus	Texas Longnosed Snake	N/A	SS2
Tympanuchus pallidicinctus	Lesser Prairie-chicken	Candidate	N/A
Buteo regalis	Ferruginous Hawk	N/A	SS1
Numenius americanus	Long-billed Curlew	N/A	SS1
Falco mexicanus	Prairie Falcon	N/A	SS1
Aquila chrysaetos	Golden Eagle	N/A	SS1
Vireo bellii	Bell's Vireo	N/A	SS2
Athene cunicularia	Burrowing Owl	N/A	SS2
Tyto alba	Barn Owl	N/A	SS2
Buteo swainsonii	Swainson's Hawk	N/A	SS2
Charadrius alexandrius nivosus	Western Snowy Plover	N/A	SS2

SS1 - a native species with a presently stable or increasing population that current evidence indicates is especially vulnerable to extirpation because of limited range, low population, or other factors.

SS2 - a native species identified by technical experts as possibly threatened or vulnerable to extirpation but for which little, if any, evidence exists to document the population level, range, or other factors pertinent to its status.

5.3.6 Species of Special Emphasis

The intended purpose of the refuge was to provide migration and wintering habitat for the short-grass prairie population of Canada geese and the High Plains population of mallard ducks. As the reservoir water levels never reached anticipated levels, the refuge is currently managed for resident wildlife and migratory birds.

The importance of Optima NWR to migratory birds is just beginning to be examined. It is expected that the combination of cottonwoods along the basin and surrounding grasslands provide an important wintering, migrating, and breeding habitat for a variety of birds. The limited number of staff visits to the refuge does not provide enough information to evaluate migratory bird use on the refuge.

Several grassland bird species have been identified as Priority Bird Populations and Habitats by the PIF program for the Rolling Red Plains physiographic region. These species are indicators of the condition of the grassland and wetland systems within this region (USGS, 2000). Their populations have been emphasized as a priority for monitoring. These include several species mentioned previously such as the Lesser Prairie-chicken and Bell's Vireo with the addition of the following species:

McCown's Longspur - The McCown's Longspur prefers habitats that include sparse short-grass plains, plowed and stubble fields, with areas of bare or nearly bare ground (AOU, 1983). Population declines may be attributed to habitat destruction due to agricultural conversion of native prairie habitat (With, 1994). In some studies, about half of all nests were lost to predators, such as the thirteen-lined ground squirrel (*Spermophilus tridecimlineatus*). McCown's Longspurs are rarely seen on the refuge.

Scissor-tailed Flycatcher - The Scissor-tailed Flycatcher is the Oklahoma state bird and inhabits open country (savannas, grasslands, croplands, pastures, gardens, parks, golf courses, and urban areas) with scattered trees and shrubs for perching and nesting. The species nests principally in isolated trees or shrubs, but may use man-made structures including telephone poles, streetlights, television antennas, power transformers, and windmills. Threats to the species are minimal as it readily adapts to open habitats created by humans. Brush eradication in portions of the breeding range could reduce nesting habitat (Nolte and Fulbright, 1996). Nests are occasionally parasitized by Brown-headed Cowbirds, but cowbird eggs are typically ejected (Regosin, 1994). Scissor-tailed Flycatchers are common on the refuge.

Scaled Quail - Scaled Quail is a grassland species found on the refuge in populations suitable for hunting. Because of their reliance upon native grasslands, these birds are susceptible to habitat disturbances by domestic livestock grazing. Much of their native range has been overgrazed. Livestock removes desirable cover species, thereby reducing an area's carrying capacity for the birds (Dixon and Knight, 1993). According to the scientific literature on Scaled Quail, hunting pressure has little effect on populations over the long term. It is considered rare to common in grasslands and open shrublands at low and mid elevations (Hubbard, 1978). Scaled Quails are common on the refuge.

Mountain Plover - The Mountain Plover is a migratory species that may be found in dry short-grass prairie and semidesert landscapes. These are gregarious birds and outside breeding season they forage and roost in loose flocks of changing composition. Flock size may exceed 1,000 on southern Great Plains in late summer. Mountain Plovers are seen occasionally in the vicinity of the refuge.

Cassin's Sparrow – During the breeding season, Cassin's Sparrows inhabit short-grass prairies mixed with scattered shrubs. Their population numbers are known to experience considerable annual fluctuations in abundance, primarily in response to changes in precipitation levels. In the southwestern deserts, they are generally most numerous during wetter years, but become scarce during droughts. Because of their inconspicuousness in winter, limited data exist to indicate trend estimates. Cassin's Sparrows are uncommon on the refuge some years and virtually nonexistent in other years.

PIF Priority Species - In addition to those species identified specifically for the Rolling Red Plains physiographic region, there are several nongame landbird species that have been prioritized for the larger central mixed-grass prairie and short-grass prairie regions. Through the PIF prioritization process, scores were determined for relative abundance, breeding and nonbreeding distribution, threats to breeding and nonbreeding areas, population trends, and area importance using various criteria established for these categories. Depending on the scores, each species was ranked and placed in tier groups from Tier I, having the highest priority for the region, and Tier II, being the next group for prioritization. Species in subsequent tiers have already been protected as Species of Conservation Concern listed birds, (Tier III), and those species protected as Federally listed threatened and endangered species (Tier IV) (Carter et al., 2000). The bird species identified for the central mixed-grass prairie and short-grass prairie regions are listed in Table 8. A complete listing of threatened and endangered species can be found in Appendix E.

Table 8 - Priority Species Known to Occur in Bird Conservation Region 19, Central Mixed- Grass Prairie, and Region 18, Short-Grass Prairie

Tier I	Tier II
Trumpeter Swan [N] Mississippi Kite*[C] Swainson's hawk*[C] Greater Prairie-chicken [N] Lesser Prairie-chicken [R] Black Rail [N] Snowy Plover*[U] Piping Plover [N] Wilson's Phalarope [C] **Scissor-tailed Flycatcher***[C] **Bell's Vireo***[R] Black-capped Vireo [N] **Cassin's Sparrow***[O] Dickcissel*[O] Northern (Baltimore) Oriole [O] Lewis's Woodpecker[O] Pinyon Jay[N]	American White Pelican[O] Northern Harrier*[C] Ferruginous Hawk [C] Bald Eagle[O] Northern Bobwhite*[C] American Avocet*[C] Upland Sandpiper* [O] Yellow-billed Cuckoo*[C] Barn Owl*[R] Burrowing Owl*[O] Short-eared Owl [O] Long-eared Owl[O] Red-headed Woodpecker*[C] Western Kingbird*[A] Loggerhead Shrike*[C] Lark Sparrow*[C] Lark Bunting [O] Grasshopper Sparrow*[C] Blue Grosbeak*[O] Painted Bunting [O] Eastern Meadowlark*[C] Orchard Oriole*[U] Bullock's Oriole *[C]

* Known to nest in the area
[A] Abundant - a common species which is numerous
[C] Common - certain to be seen in suitable habitat
[U] Uncommon - present, but not certain to be seen
[O] Occasional - seen only a few times during a season
[R] Rare - seen at interval of two to five years
[N] Not observed on the refuge or at Optima Reservoir.
Bold = species of special emphasis

5.4 Research Natural Area

A long term (5 year) vegetation manipulation study is being conducted at Optima NWR by a professor from the University of Central Oklahoma. Baseline plant collection studies are underway on Optima NWR, conducted by Southwestern Oklahoma State University. A Ferruginous Hawk that was fitted with a radio transmitter in Saskatchewan has been monitored during the past two years at Optima.

Covering approximately 1,925 acres, sagebrush habitat is the dominant plant community on the refuge. This habitat was evaluated in 1976 to determine if it fit the Research

Natural Area (RNA) description of Kuchler's type 70, Sandsage-Bluestem Prairie. It was felt that most of this land did not meet this classification, but could in the future if the native grasses made a comeback.

5.5 Climate

The general climate for the Optima NWR area is semiarid. The average precipitation for nearby Guymon is 17 inches. During the summer, temperatures of 100 to 105 degrees Fahrenheit can be expected, but the nights are cool. In the winter temperatures of 0 degrees Fahrenheit are not uncommon, but are usually short lived (Figure 15 shows 30-year average temperatures and precipitation recorded at Hooker, Oklahoma, as recorded by Qwikcast.com). Average wind velocity is approximately nine miles per hour. The average date of the first killing frost is October 20, and the average date for the last killing frost is April 20.

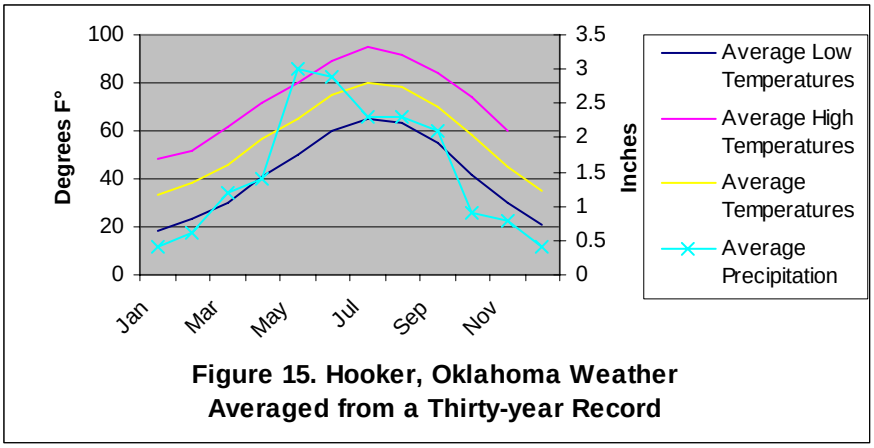

Figure 15. Hooker, Oklahoma Weather Averaged from a Thirty-year Record

5.6 Physiography and Geology

The Optima NWR is located on the southwest end of Optima Reservoir; the central portion of the refuge lies within the Coldwater Creek floodplain. The refuge is topographically flat to rolling, consisting primarily of creek bottom, adjoining bluffs, and uplands.

The high plains physiographic region of Oklahoma, where Optima NWR is located, is one of the state's most topographically level areas. The land is characterized by gently rolling hills and a overall west to east slope averaging about 12 feet of vertical decrease per mile (Oklahoma Almanac 2005). Bedrock in this region is composed of Pliocene through Oligocene sedimentary rocks with a covering of glacial outwash from the Rocky Mountains (USGS).

5.7 Soils

Eleven soil types occur on the refuge as illustrated on a detailed soil map from the NRCS. These soils types are from three soil associations which include Sweetwater-Lincoln-Spur, Mansker-Potter-Berthoud, and Richfield-Ulysses. The Sweetwater-Lincoln-Spur and the Mansker-Potter-Berthoud soils are a deep sandy to sandy and highly erodible type.

Refuge croplands are made up of six different soil types. Three of the soils, Bayard fine sandy loam, Berthoud loam, and Spur are Class II soils. These soils comprise about 340 of the 350 acres under cultivation. Soils on the refuge are susceptible to wind and water erosion and are typical of soils found in the Oklahoma Panhandle. In general, these soils are not productive croplands unless there is above average rainfall.

5.8 Land Use

The Panhandle area of Oklahoma was the last wild-west frontier. It was passed by and unclaimed for half a century by the surrounding states. Homesteaders began settling in the panhandle in the mid-1880s and called the area Cimarron Territory. Over the years prior to becoming a refuge, these rangelands were plowed and converted to croplands. In Texas County approximately 60 percent of the land has been plowed. Much of the soil placed under cultivation was not suitable for crop production and considerable erosion occurred. The short-grass and mixed-grass prairie has become a disclimax (i.e., a stable community maintained by disturbance) of plant groups resulting from continuous overuse while in private ownership. Present plant associations reflect changes caused by overgrazing, plowing native rangeland, and in a few instances, prairie restoration efforts.

5.8.1 Croplands

Farming on Optima NWR has been a part of habitat management since the refuge's establishment. From 1978 to 1982 the refuge used more than 500 acres for growing crops. Since the early 1980s, over 95 acres of this farmland has been restored to grassland. Green browse and cereal grains are grown for the benefit of resident wildlife and migratory birds. White-tailed deer use these areas for food and cover.

The refuge practices low input sustainable agriculture. The refuge has used herbicides as a component of integrated pest management. Mechanical methods of weed removal are the primary pest control method. Where possible, crops are drilled through the remnants of the previous year's planting, generally reducing the need to disturb the soil. Refuge farming is done by cooperative farmers or refuge personnel. In 2005 approximately 220 acres of the refuge were farmed by cooperative farmers and 26 acres were farmed by refuge staff. This acreage varies from year to year.

5.8.2 Forest Lands

Approximately 540 acres of the Optima NWR are classified as noncommercial forest lands. This acreage is a combination of planted windbreaks or shelter belts and native woods found along the Coldwater Creek. Deciduous trees along the waterways include mulberry, black willow, hackberry, and eastern cottonwood.

5.8.3 Grasslands

The refuge contains approximately 1,500 acres of grasslands, including 1,175 acres of native and 95 acres of restored grasslands. Much of the grassland, particularly the restored prairie, is vulnerable to erosion. Management of such areas is aimed toward maintaining a healthy grassland ecosystem with its current plant and animal species diversity rather than managing for one species. Management practices include fence maintenance, prescribed fire, and grassland restoration. The importance of the refuge grasslands for wildlife is magnified by the land uses on adjoining private pasture and farmland. The refuge grasslands provide food and cover for a variety of songbirds and upland game throughout the year.

5.8.4 Administrative Lands

Approximately 13 acres are in administrative lands including, but not limited to the following: roads, parking areas, public access, and the refuge administrative area, with limited or no vegetation present.

Entrance signs are located at the Optima NWR boundary on Highway 3/412. Refuge boundaries are posted approximately every one-quarter mile. There are approximately 17 miles of exterior boundary fence and two miles of interior fencing (Figure 16 depicts refuge developed facilities).

5.8.5 Water Management

The refuge water management is very limited. Coldwater Creek passes lengthwise through the refuge. This creek is now a dry streambed, except for the extreme east mile which has some small semi-permanent wetlands. Constructing developed wildlife water sources adjacent to Coldwater Creek (widening and deeping the creek channel) is planned if funding is approved. Two guzzlers are currently present on the refuge. Each consists of a sheet metal collector and a storage tank, which releases water to a trough using a float valve.

5.8.6 Water Rights

The Optima NWR was established without water rights, anticipating a pool level of the reservoir that would inundate portions of the refuge and create aquatic and wetland habitat. Because the reservoir pool never reached the anticipated levels, Optima NWR supports only small areas of wetland habitat and has extremely limited potential for effective water management.

5.8.7 Land Status

Optima NWR is managed under an agreement between the Department of the Interior and the Corps, and as such, operates as an overlay of Corps land. Currently, there are no plans to acquire additional land for the refuge.

5.8 Fire Management

Due to the plant composition, limited rainfall, and lack of support staff, no prescribed fires have been conducted at Optima NWR in recent memory. Fire management at the refuge is limited primarily to maintaining an effective boundary fire break around the refuge.

5.9 Archaeological, Cultural, and Historical Resources

A total of 16 pieces of Alibates flint, commonly used by Indian tribes for making arrowheads, were found on the refuge (east of Highway 3/412 on the north side of Coldwater Creek). This cache of flint was not deemed a find of significance. Very little excavation has been done on the refuge.

5.10 Wildlife-Dependent Recreational Use

The National Wildlife Refuge System Improvement Act of 1997 recognizes six wildlife-dependent public uses: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. These uses are given priority on refuges when determined to be compatible. Except where otherwise mandated by law, the Service must determine whether a particular use is compatible with refuge resources before permitting it. Compatibility determinations are normally made by the Refuge Manager in accordance with guidelines developed by the Service. Under these guidelines, a compatible use is defined as one that "will not materially interfere with or detract from the purposes for which the refuge was established." Compatible uses support refuge purposes or may have a neutral effect. In making a compatibility determination, the Refuge Manager must first determine if the use is compatible with refuge purposes strictly on biological grounds. After making such a determination, the Refuge Manager must further consider applicable laws, FWS policy, and public opinion (Lee 1986).

Although Optima NWR lacks a visitor contact station, on-site staff or interpretive materials, ease of access favors some visitation. The refuge annually receives approximately 1,450 visitors, the majority of whom (1,150) are there to participate in hunting for deer or small game. Visitors can access the refuge from Highway 3/412, two miles north of Hardesty, Oklahoma. Public access into the refuge is by foot only. Four parking areas are located around the refuge. The refuge headquarters is located at the Washita NWR, more than 170 miles from Optima NWR by highway.

There are no visitor service facilities on the refuge.

Hunting, wildlife observation, photography, and hiking in support of these activities have been determined to be compatible with the refuge purposes and objectives (refer to step-down management plans).

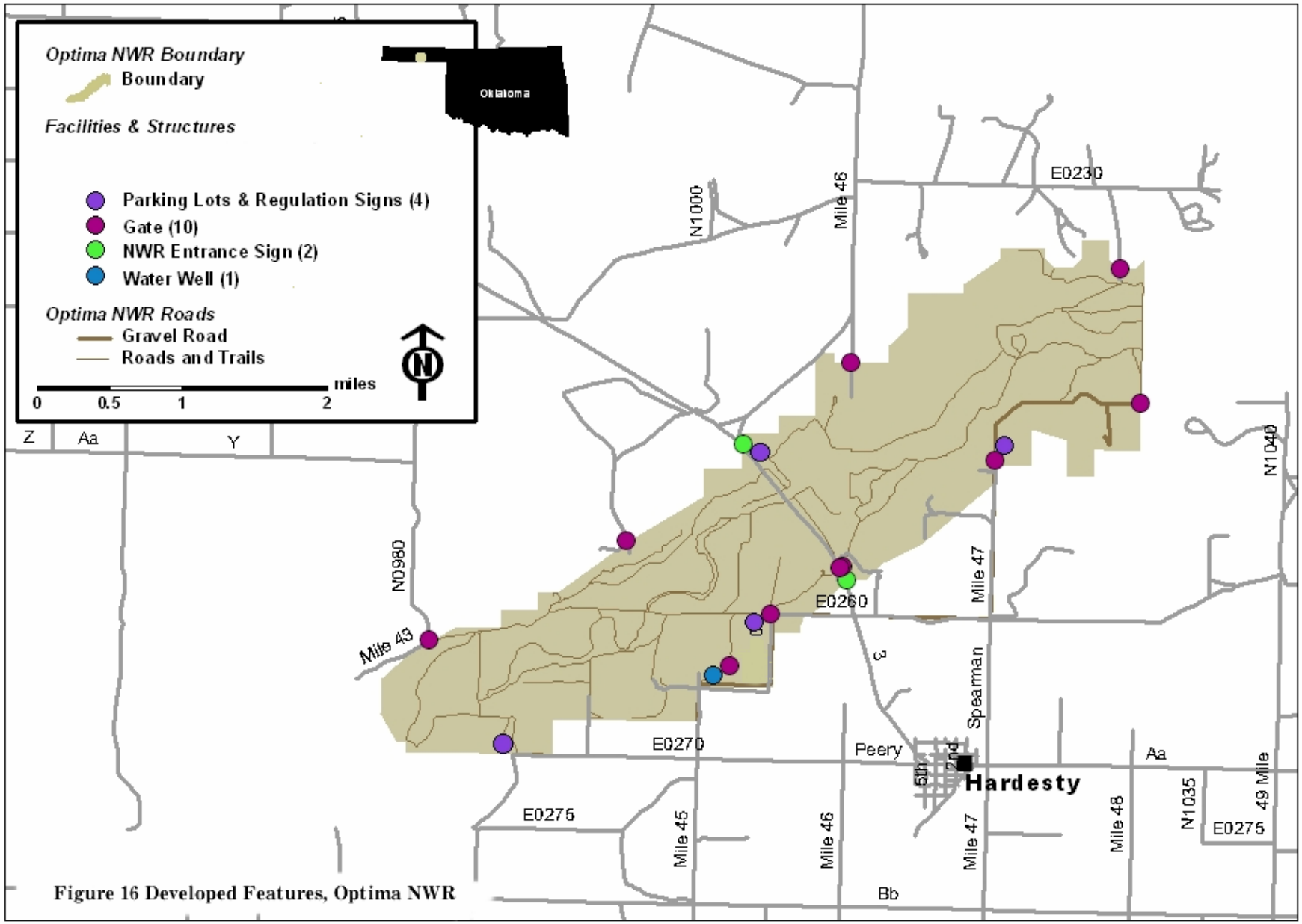

Figure 16 Developed Features, Optima NWR

5.10.1 Hunting

The refuge is open to deer and turkey (fall archery season only), turkey (spring season shotgun only), pheasant, quail, dove, and rabbit hunting, concurrently with state seasons. Additional hunting opportunities are available on the adjacent State Wildlife Management Area.

5.10.2 Fishing

Fishing is not available on the refuge. Optima Reservoir, located approximately one mile from the refuge, is not considered to offer a reliable fishery due to low water levels and the lack of permanent pools.

5.10.3 Wildlife Observation and Photography

There are few facilities currently in place that can provide the public with opportunities to view the refuge's resources. Visitors access the refuge by foot and can view wildlife while walking the old roads and trails or from vehicles parked on county roads adjacent to the refuge boundaries.

5.10.4 Environmental Education and Interpretation

No environmental education or interpretation programs currently exist at Optima NWR. The refuge staff has little opportunity to provide such services at Optima NWR due to their primary focus on Washita NWR and the great physical distance between the refuge headquarters at Washita and the Optima NWR. The refuge solicits environmental education opportunities for area schools and universities.

5.11 Socioeconomic Features

Optima NWR is located in Texas County (population 20,296), approximately two miles north of the town of Hardesty (population 271), and approximately 14 miles east-southeast of the town of Guymon (population 10,565).

The presence and operation of the Optima NWR has a socioeconomic effect on the surrounding communities, especially the towns of Hardesty and Guymon.

Approximately 1,150 hunters use the refuge each year, including many out of state visitors. Local community businesses including restaurants, grocery stores, motels, service stations, and sporting goods stores all profit from these visitor services programs.

There are currently four gas producing wells on Optima NWR. All mineral rights were retained by the previous landowners.

5.12 Population

The U.S. Census Bureau estimated the State of Oklahoma population at 3,523,553 in 2004. Among the 50 states it ranked as the 29th most populous. By 2025, it is projected to have a population above four million people. The 2004 population estimate for Texas County is 20,296. This ranked the county 39th among Oklahoma's 77 counties.

The 2000 census included a separate non-racial category of Hispanic or non-Hispanic. Individuals could indicate their status as Hispanic or not while also indicating their membership in a racial group such as White, Black/African American, or Asian. Nine percent of the population reported Hispanic descent. The 2000 census introduced a separate racial category of "Two or More Races."

The 2005 census estimates report that 96 percent of the population of Texas County is White. The remaining 4 percent of the population is composed roughly equally (approximately 1 percent of each group) of Native Americans, Blacks /African Americans, Asian Americans/Native Hawaiians/Pacific Islanders, and Individuals of Two or More Races.

5.13 Regional Economic Profile (Growth)

Texas County is a rural county with over 85 percent of the land in farms. In 2002 there were 1,002 farms in Texas County, occupying 1,181,025 acres of land (USDA, 2002). The total personal income in Texas County from 2000 through 2003 averaged $530,334,000. The average per capita income generated from 2000 through 2003 was $26,571. Farm earnings constituted 23 percent of all earnings gained in Texas County from 2000 through 2003.

Table 9 - Texas County Personal Income Accounts Data, 2000 to 2003.

Texas County	2000	2001	2002	2003
County population (number of persons)	20,183	20,136	20,045	19,926
Per capita personal income	$28,238	$28,014	$24,185	$25,220
Personal income	$569,919,000	$594,095,000	$484,784,000	$502,536,000
Nonfarm earnings[1]	$325,334,000	$333,435,000	$336,096,000	$333,644,000
Farm earnings[1]	$145,340,000 (26%)	$129,204,000 (29%)	$53,688,000 (11%)	$71,269,000 (14%)
[1]Listed as earnings by place of work (only wages and salaries, adjustments to wages and salaries and proprietors' earnings)				

Source: U.S. Bureau of Economic Accounts

The primary source of income from the county is private employment. Employment breakdown by industry was as follows in 2000:
18 percent financial, real estate and other services;
17 percent agriculture;
17 percent manufacturing;
16 percent education, health and social services;
12 percent retail trades;
6 percent construction;
5 percent transport and warehousing;
4 percent public administration;
2 percent information;
2 percent wholesale trade (Barta et al., 2002).

Western Oklahoma, including Texas County, is strongly agriculturally oriented with local agriculture focused primarily on wheat, cotton, grain sorghum (milo), pork confined feeding operations and beef cattle. In recent years, the natural gas and oil industry has also played a vital role in the socioeconomic climate of Texas County.

6.0 OPTIMA NWR ADMINISTRATION

Maintenance of existing programs and facilities has been the sole endeavor of the existing staff on infrequent trips to the refuge from the headquarters at Washita NWR. In order to enhance current programs and initiate new activities, additional staff positions will be required.

6.1 Refuge Staffing

There is currently no staff dedicated to Optima NWR. Although Washita and Optima NWRs are operated as a complex, all staff is located at Washita NWR. Wildlife surveys, fence inspections and other management activities at Optima NWR are accomplished by staff on periodic visits to the refuge.

6.2 Memoranda of Understanding and Other Agreements

MOU provide the framework for cooperation between branches of the government and NGOs. MOU can be used to delineate management and jurisdictional responsibilities and allow for more efficient use of limited resources (MOU and other agreements can be reviewed in Appendix I).

6.2.1 Current Agreements

The refuge has had a Cooperative Agreement with the Corps regarding the management of wildlife resources for the refuge dating from the inception of the reservoir in 1975. All of the refuge is an overlay of property originally acquired by the Corps.

There is a Cooperative Agreement between the refuge and one cooperative farmer. The cooperative farmer currently plants approximately 220 acres of winter wheat annually.

The refuge has agreements with the local volunteer fire departments along with partnerships and working relationships with a variety of organizations such as Texas County, ODWC, NRCS, ODOT, and others. These agreements are not MOU but provide the foundations that allow cooperative efforts on a variety of projects.

6.3 Other Land Management

The entire reservoir project includes two other management areas besides the Optima NWR. The Optima Park Area, administered by Texas County, offers visitors opportunities for primitive camping at Hardesty Park and at the stilling pond adjacent to the dam. The County also maintains restrooms at the stilling pond.

The ODWC administers a public hunting/wildlife management area (Optima WMA) on the remainder of the Corps project area, excluding the footprint of the dam and the primitive camping areas. Optima WMA offers the public hunting opportunities for waterfowl, quail, pheasant, dove, rabbit, and deer.

The other main land management activity on the refuge is gas well servicing. There are currently four gas producing wells on Optima NWR.

6.3.1 Utility Lines

Three utility companies operate lines crossing the refuge: Southwestern Public Service, Tri-County Electric Cooperative, Inc., and Panhandle Telephone Cooperative, Inc.

6.3.2 Road Rights-of-Way

The right-of-way for State Highway 3/412 bisects the refuge, and one county road which borders one mile of refuge boundary. Under the Cooperative Agreement between the Corps and the Service, the Corps is responsible for all easements on the refuge. There are easements for eight companies on the refuge.

7.0 REFUGE MANAGEMENT DIRECTION: GOALS, OBJECTIVES, AND STRATEGIES, WASHITA NWR

The following goals, objectives, and strategies are the Service's response to the issues and concerns expressed by the planning team and the public. They are expected to be implemented during the 15 year term of this plan. As the CCP is a working document, some modifications to the following objectives are anticipated during the plan term. Ultimately, the goals, objectives and strategies are designed to assist in achieving both the purposes of the refuge and the mission of the National Wildlife Refuge System.

7.1 Goal 1: Attract Waterfowl

The refuge will continue to attract and retain large numbers of migrating and wintering waterfowl and shorebirds through enhancing refuge wetlands, moist soil area management, and farming for wildlife programs.

Rationale for Goal: As mentioned above in Section 3, Washita NWR is located within the Central Flyway and was established, in part, to provide protection and food for migrating and wintering waterfowl. Much of the habitat formerly suitable for migratory waterfowl in the Central Flyway has been converted to agricultural, urban or other uses. It is thus necessary to concentrate waterfowl use on conservation lands such as refuges and state game management areas. Conservation of migratory birds through maintaining a network of refuges is a goal of the National Wildlife Refuge System.

Objective 1: Continue to manage approximately 84 acres of moist soil units to provide food and habitat for wintering and migrating waterfowl. Implement measures to increase effectiveness and reduce maintenance of moist soil units.

Current Condition: The refuge operates 84 acres of moist soil areas. Water pumped into these areas from the Washita River and retained at various depths by dikes and outlet structures fosters growth of a variety of wetland plants of high food value to waterfowl. Flooding the areas when the plants are mature also provides safe feeding areas. Current management results in considerable germination of cottonwood and willow in the moist soil units. While cottonwood is a component of the native riparian community, its shoots have low to no food value for waterfowl, and are thus inappropriate for moist soil unit management. In 2007 the refuge will initiate an experimental use of one moist soil unit as a fish nursery by flooding it in the spring and summer when it is not used by wintering waterfowl. The resulting shallow areas, comparatively free of predatory fish, should provide relatively safe areas for small fish to grow prior to being released into the Washita/Foss Reservoir system.

Rationale for Objective: Moist soil management to produce food and feeding habitat for waterfowl is a well established practice in waterfowl refuges. The refuge will continue to fine-tune management of the moist soil areas to maximize production while reducing management costs.

Strategies for Accomplishing Objective:

1. Monitor water quality in moist soil areas to detect any problems and track changes in the quality of water flowing into the refuge.
2. Regularly mow the sides of dikes to prevent establishment of woody vegetation.
3. Annually sample the substrate of moist soil areas for any build up of nitrates, ammonia, chloride, or orthophosphates.
4. Regrade the edges of the moist soil units to a gentler slope. This will allow managing some areas for mud flats to benefit shorebirds.
5. Mow the bottoms of the moist soil areas as needed to remove cottonwood seedlings.

Objective 2: Within two years of plan adoption, survey refuge for potential additional moist soil area development.

Current Condition: The refuge operates and maintains approximately 84 acres of moist soil management areas. These areas are well used by ducks and have the potential to provide shorebird and fish nursery habitat.

Rationale for Objective: The number of duck-use days on the refuge has been considerably below target numbers. While decreases may reflect fewer ducks in areas surrounding the refuge due to changes in agricultural practices, provision of additional moist soil management acreage should increase duck use.

Strategies for Accomplishing Objective:

1. Use cover type mapping to preliminarily identify areas suitable for conversion.
2. Select areas close to the Washita River or Foss Reservoir that have low to moderate existing habitat quality.
3. Design basin shape and grading based on experience with existing moist soil areas on the refuge and review of literature.
4. Select plant mix based on experience with existing moist soil areas on the refuge and review of literature.

Objective 3: Within four years of plan adoption complete investigations of the potential to enhance wetlands along the shallows of Foss Reservoir and the Washita River.

Current Condition: There are several shallow areas near the Foss Reservoir shoreline within the refuge. Establishment of wetland vegetation is retarded by wave action and varying water depth in some of these shallows. Water level in Foss Reservoir varies somewhat in response to lake management by the FRMDC; control of water level in the reservoir is beyond the refuge's influence.

Rationale for Objective: Additional wetland acreage on the refuge would provide additional habitat for ducks and shorebirds during various water regimes in Foss Reservoir.

Strategy for Accomplishing Objective:

1. Investigate suitable locations for their potential to develop wetland vegetation if wave barriers are installed and a mix of wetland vegetation planted.

Objective 4: Continue to cultivate forage for waterfowl on approximately 2,000 acres

Current Condition: The refuge grows crops for waterfowl forage on approximately 2,000 acres. Warm season crops include legumes and milo; cool season crops include winter wheat, rye and winter peas. Planting and maintenance of the farmed areas is conducted by refuge staff (force account farming) and private farmers under agreement with the refuge (co-op farmers). Co-op farmers cultivate refuge lands and abide by various agricultural restrictions necessary to protect wildlife in order to obtain additional harvests. While the acreage planted by force account and co-op farmers varies, typically each cultivates approximately one half of the farmed land on the refuge.

Rationale for Objective: Farming for wildlife is a well established practice on waterfowl refuges. This practice aids in providing sufficient forage for the high concentrations of migrating and wintering birds attracted to a refuge. This objective aims at assuring that the refuge farming program is continued and is limited to areas where it will be the most beneficial land use. Farming areas that could be restored to high value or locally rare natural cover types, such as riparian forest, may not be the best use of the areas. Similarly, some farmed areas may be unattractive to waterfowl, such as narrow strips bordering brushy cover, and may not be used by waterfowl due to predator avoidance tendencies.

Strategies for Accomplishing Objective:

1. Review effectiveness and appropriateness of all farmed areas. Consider conversion of areas with low use by waterfowl or with high potential for other, more beneficial uses.
2. Work with local agricultural extension agent to identify potential co-op farmers as needed.

Objective 5: Within two years of plan adoption, develop an Integrated Pest Management (IPM) plan for refuge farmland suitable for implementation by co-op farmers and refuge staff engaged in force account farming.

Current Condition: Agricultural pests and weeds are a problem for crop growth at the refuge. Both co-op farmed and force account farmed fields on the refuge have low yield, as compared to similar fields off refuge, due to extensive grazing by geese and restrictions on pesticides and herbicides imposed to protect wildlife health.

Rationale for Objective: IPM is the use of a variety of management methods to enhance or replace the use of pesticides for pest control. IPM may include site monitoring for pest levels, site modifications (such as removal of habitat sites for insects or rodents, soil enhancements, or providing plants that will enhance natural predators) instead of, or in combination with, use of one or more control methods including chemical control (herbicides, insecticides, other pesticides) biological control (natural predators or pest

disease organisms), cultural control (crop rotation), and/or physical control (traps). It is possible that IPM could increase crop yields, and thus make farming the refuge more attractive to co-op farmers, while maintaining an acceptable level of protection for wildlife using the fields.

Strategies for Accomplishing Objective:

1. Consult County Agriculture Extension Agent to identify locally prevailing agricultural pest management practices.
2. Consult with Service Regional Office and field invasive species coordinators to identify pest management practices being successfully used in other, similar refuges.
3. Consult with other National Wildlife Refuges in the area, retired staff of western Oklahoma refuges and others with local experience to identify viable control strategies.

7.2 Goal 2: Restore Native Plant Communities

The refuge will work to restore degraded or altered natural habitats through control of exotic species and reestablishment of native plant communities.

Rationale for Goal: The Service's Ecological Integrity Policy states, in part, "We will, first and foremost, maintain existing levels of biological integrity, diversity, and environmental health at the refuge scale. Secondarily, we will restore lost or severely degraded elements of integrity, diversity, [and] environmental health at the refuge scale and other appropriate landscape scales where it is feasible and supports achievement of refuge purpose(s) and System mission." The policy defines biological diversity as the variety of life and its processes, including the variety of living organisms, the genetic differences among them, and communities and ecosystems in which they occur; biological integrity as the composition, structure, and function at genetic, organism, and community levels comparable with historic conditions, including the natural biological processes that shaped genomes, organisms, and communities; and environmental health as composition, structure, and function of soil, water, air, and other abiotic features comparable with historic condition, including the natural abiotic processes that shape the environment.

Given the policy summarized above, it is appropriate to preserve any remaining native plant communities on the refuge that are representative of the pre-agricultural past. Where it is consistent with achieving the refuge purposes, it is also appropriate to restore any altered plant communities on the refuge to a condition similar to that of the pre-agricultural past.

Objective 1: Restore an average of 35 acres of degraded grasslands per year to approximate native short- and mixed-grass prairie condition.

Current Condition: Approximately 1,300 acres of refuge grasslands, primarily areas that were previously tilled or heavily grazed by livestock, are in a degraded condition. Degrading factors include infestations of invasive plant species such as Johnsongrass and cheat grass, as well as encroachment by woody species such as eastern redcedar.

Rationale for Objective: Restoring native prairie is consistent with the Service's Ecological Integrity Policy. Native prairies provide important habitat for a wide diversity of native wildlife species and have suffered severe declines throughout the region due to conversion to cropland and invasion of non-native plant species. Replacing exotic, invasive species with native species and communities is also consistent with recommendations for coping with climate change proposed by the Wildlife Society (Inkley et al., 2004). Native prairies are also important components of the local area's natural heritage. Restoring prairie would thus provide representative habitat on the refuge.

Strategies for Accomplishing Objective:

1. Continue to use prescribed fire to reduce encroachment of woody species.
2. Work with regional office invasive species coordinator to identify appropriate management techniques for Johnsongrass and other herbaceous invasive species.

Objective 2: Continue hunting programs to stabilize or reduce the size of refuge deer population.

Current Condition: The refuge population of white-tailed deer has grown considerably in recent years. The large population of deer threatens to alter the vegetative structure and composition of refuge woodlands and shrublands and creates safety hazards for drivers on State Highway 33. In response to this problem, the refuge initiated a youth antlerless deer hunt in 2001 and a general anterless deer hunt in 2002.

Rationale for Objective: The density of deer on the refuge has increased to an unnaturally high level. Reducing this high density of deer on the refuge is consistent with the Service's Ecological Integrity Policy. High populations of deer on the refuge alter natural habitats.

Strategies for Accomplishing Objective:

1. Continue to offer deer hunts in cooperation with ODWC.
2. As deer population conditions warrant, expand or reduce bag limits.
3. Continue to focus hunting opportunities on harvesting does until such time that population data indicate a need to change management strategies.

Objective 3: Within five years of plan adoption, conduct a baseline survey of refuge habitat and wildlife resources.

Current Condition: No full baseline survey of refuge wildlife and habitat resources has been conducted. The refuge has a comprehensive bird list, and staff and students from Southwestern Oklahoma State University are currently collecting and identifying plants of the refuge. Information regarding the distribution, diversity and abundance of mammals, reptiles and amphibians on the refuge is limited primarily to range maps, anecdotal information and observations incidental to other work on the refuge.

Rationale for Objective: More complete knowledge of the wildlife species and habitats present at the refuge will foster effective management planning.

Strategies for Accomplishing Objective:

1. Design appropriate baseline surveys.
2. Expand cooperative survey programs with Southwestern Oklahoma State University and encourage use of the refuge as a field laboratory with the intended byproduct of the research being wildlife and habitat baseline surveys.
3. Solicit assistance in conducting surveys from qualified volunteers.
4. Implement surveys.

7.3 Goal 3: Mitigate Highway Impacts

The refuge will investigate the effects of an existing high speed highway on refuge habitats and wildlife populations. Where feasible, the refuge will mitigate these effects.

Rationale for Goal: The ecological effects of traffic and road infrastructure have garnered increasing attention in recent years (Forman et al., 2003). On Washita NWR, State Highway 33 carries high-speed traffic through the refuge, and fragments the floodplain and wetlands associated with the Washita River by a raised road berm. The highway affects wildlife populations both by direct mortality (vehicle strikes of animals) and by restricting movement within habitats.

Objective 1: Within seven years of plan adoption, develop plans for measures to limit deer/vehicle collisions on State Highway 33.

Current Condition: Deer/vehicle collisions are an acknowledged problem on the segment of State Highway 33 that transits the refuge. Despite the presence of a highway bridge within 50 yards of the primary crossing point, under which deer could pass, deer continue to cross the highway and are frequently struck by vehicles. The refuge has installed deer crossing signs on the highway and added flashing lights to the sign posts to increase their visibility, in an effort to foster driver awareness of the problem.

Rationale for Objective: Vehicle strikes of deer cause human injury, animal suffering/mortality and loss of property. The refuge could benefit from review of ongoing efforts to address similar problems elsewhere and apply findings to the refuge's situation.

Strategies for Accomplishing Objective:

1. With assistance of Regional Biologist, refuge staff will review literature on new developments in deer/vehicle collision mitigation.
2. Refuge staff will work with Oklahoma Department of Transportation staff to identify more effective means of alerting drivers to the deer strike hazard.
3. Refuge staff will examine the existing Highway 33 bridge and seek modifications that would make it more attractive to deer as a road underpass.
4. The refuge will invite university and other independent researchers to investigate the issue and recommend mitigation measures.

Objective 2: Within eight years of plan adoption, determine the level of impact to small vertebrates caused by direct mortality on State Highway 33 and habitat fragmentation by the highway.

Current Condition: No quantified data exist regarding the level of road kill of small animals on State Highway 33, but casual observation shows that many amphibians, reptiles and small mammals are struck by vehicles on the road. The effect of the road's elevated grade on habitats that formerly were contiguous across the road is also largely unstudied.

Rationale for Objective: While deer/vehicle accidents garner attention due to their high visibility and high levels of property damage to vehicles, population impacts to small vertebrates from road mortality, chemical runoff and habitat fragmentation may be great. Existing studies suggest that population effects of roads on small vertebrates can be significant (Forman et al. 2003).

Strategies for Accomplishing Objective:

1. Invite university and other independent researchers to conduct studies of the effects of Highway 33 on refuge small vertebrate populations.
2. Until such studies are in place, refuge staff should survey roadsides weekly for small vertebrate road kill during the spring amphibian migration period.
3. Respond with appropriate mitigation measures if significant fragmentation and mortality is found.

7.4 Goal 4: Cultural Resources

Identify, protect, and interpret the prehistoric and historic cultural resources of Washita National Wildlife Refuge for the benefit of present and future generations.

Rationale for Goal: The Archaeological and Historic Preservation Act of 1974, as amended, mandates protection of archaeological and historical artifacts on federal lands and requires that federal land managers develop plans to identify such resources. Interpreting the history and prehistory of Washita NWR should enhance visitors' overall experience at, and appreciation of, the refuge.

Objective 1: Within ten years of plan adoption, install an exhibit in the refuge visitor contact station interpreting the history of the region.

Current Condition: Historical resources are not interpreted in any detail at the visitor contact station currently.

Rationale for Objective: Understanding the cultural history of the refuge region yields insights into the current conditions at the refuge. For example, the dust bowl period marked an important change in the population and land use patterns of western Oklahoma. Understanding the nature of this change would yield an appreciation of current wildlife habitat in the refuge region.

Strategies for Accomplishing Objective:

1. Consider providing space to a local partner that would develop and mount display.
2. Obtain prints of historical photographs taken by the U.S. Department of Agriculture's Resettlement Administration during the 1930s.
3. Review local libraries and town halls for accounts of settlement and employment in the region, from early settlement period through recent times.
4. Request loans of any artifacts that would illustrate the exhibit.

Objective 2: Within ten years of plan adoption, complete a cultural resources overview and assessment of the refuge.

Current Condition: No systematic review of refuge cultural resources has been conducted. Very little excavation or other on-site search for archaeological resources has occurred on the refuge. The refuge has developed signage that provides historical descriptions of the development history of Foss Reservoir and mentions the evidence of prehistoric human use of the Washita River valley.

Rationale for Objective: A catalogue of known or suspected cultural and historic sites on the refuge would assist in avoiding impacts to such resources during refuge management projects that involve land disturbance. The understanding of refuge historical and archaeological resources that such an overview would provide would assist in protecting and interpreting (as appropriate) the refuge's cultural resources for many years.

Strategies for Accomplishing Objective:

1. Request funds for preparation of the overview.
2. Work closely with Regional Office Cultural and Historical Resources Conservation staff and BOR archaeologists to develop standards for the overview.
3. Develop signage interpreting cultural resources on the refuge, where such signage would not likely result in damage to cultural resources by "pot hunters" or others seeking cultural artifacts.

7.5 Goal 5: Wildlife Dependent Recreational Uses

The refuge will increase public awareness and appreciation of refuge wildlife resources by improving outreach, environmental education, interpretive materials, and recreational facilities.

Rationale for Goal: The Refuge System Improvement Act identifies six priority wildlife dependent public uses of National Wildlife Refuges and states that these uses should be facilitated on refuges when they are compatible with the refuge purpose. The uses are hunting, fishing, wildlife observation and photography, environmental education and interpretation. Well developed wildlife dependent outdoor recreation opportunities and educational/interpretive programs benefit refuge visitors and the surrounding communities, while also enhancing the refuge's popularity. These opportunities should foster public support for the refuge and its programs, as well as support for wildlife conservation generally.

Objective 1: Within five years of plan adoption, develop an environmental education plan for local schools and provide educational resource materials suitable for use in area schools.

Current Condition: The refuge currently offers educational opportunities to area schools upon request. Refuge staff prepares instructional materials on a case-by-case basis.

Rationale for Objective: Environmental education is one of the six wildlife dependent priority public uses of the National Wildlife Refuge System. Active engagement of schools will support the provision of this use and will improve local knowledge and appreciation of Washita NWR.

Strategies for Accomplishing Objective:

1. Purchase books containing suitable environmental topics and donate to area schools for their libraries. Coordinate with Regional Office Visitor Services staff to identify appropriate resources (e.g., books on local natural history and wildlife, lesson plans and other environmental education materials, refuge brochures, etc.).
2. Meet with area school principals and teachers to raise awareness of the refuge in schools and identify educational needs or interests the refuge could fill.
3. Seek opportunities to conduct teacher workshops jointly with ODWC or BOR staff.
4. Develop curriculum guides to assist teachers at various grade levels in developing outdoor and nature education programs.

Objective 2: Continue to develop and install signs or other appropriate media that interpret the refuge's natural resources, history and management programs.

Current Condition: Informational signage has been developed and installed at several locations on the refuge. Signs at a kiosk near the visitor contact station interpret the waterfowl migration in the central flyway and the small prairie dog colony nearby. The Centennial Trail, near the State Highway 33 crossing of the Washita River, includes multiple signs interpreting the area's natural communities. Signs at other locations interpret the fish of Foss Lake, wildlife use of wetlands and shallows of the lake, prairie grasses, farming for wildlife, and the growth and management of the refuge deer herd.

Rationale for Objective: Environmental interpretation is one of the six wildlife-dependent priority public uses that should be facilitated on National Wildlife Refuges when compatible with the refuge's purpose. Well designed interpretive signage is a durable, low maintenance, and long-lasting method of providing environmental interpretation to refuge visitors. Interpretation of refuge management programs and their benefit to resident and migratory wildlife can assist in developing public support for those programs.

Strategies for Accomplishing Objective:

1. Identify resources of public interest that are visible from points easily accessed by refuge visitors.

2. Work with Regional Office Visitor Services staff to design attractive, durable and informative signs or other appropriate media, such as site specific short-range radio broadcasts to interpret those resources and programs.
3. Work with Regional Office Visitor Services staff to identify vendors to manufacture signs that will withstand weather and resist vandalism.
4. Develop a brochure, or other appropriate materials, showing county road access to points of interest on the refuge and the location of interpretive signs.
5. Work with Regional Office Visitor Services staff to develop a comprehensive interpretation plan.

Objective 3*:* Within seven years of plan adoption, develop a network of primitive hiking trails through the refuge.

Current Condition: Public use trails on the refuge are currently limited to the Centennial Trail and a short paved sidewalk leading from the visitor contact station to an overlook.

Rationale for Objective: Members of the public attending refuge scoping sessions expressed a desire for hiking trails in the refuge longer than those currently existing. If designed to avoid disturbing sensitive wildlife areas at critical times, primitive hiking trails can be a low-cost, effective method of providing opportunities for wildlife observation and photography. Flather Cordell, in a survey of recreation trends, identified day hiking as the land-based activity not directly dependent on wildlife likely to generate the greatest growth in recreation trips to public lands between 2000 and 2040 (1995). Providing hiking trails on the refuge should thus address a recreational need, while also providing additional opportunities for interpretation.

Strategies for Accomplishing Objective:

1. Survey refuge for potential trail locations that include attractive vistas and avoid sensitive habitats.
2. Mark trail route with small reflectors placed approximately five to six feet above ground level. Limit trail improvements to the minimum necessary for resource protection and user safety (e. g., footbridges across stream to protect the stream bed from trampling).
3. Periodically (once or twice per year) inspect trails for condition, clear any downed trees blocking the trail route and mow herbaceous vegetation along the trail route.

Objective 4: Continue to encourage use of all refuge hunting blinds in areas not generally closed to the public by photographers and wildlife watchers during the off-season.

Current Condition: The refuge maintains 12 covered pit blinds for goose hunters, as well as three permanent and several temporary blinds used in the youth deer hunt. When not in use for the hunts, these blinds are available for wildlife watching and photography, except for those in areas closed to general public access.

Rationale for Objective: Allowing use of the blinds by photographers and wildlife watchers facilitates those recreational uses with only a modest increase in operational effort.

Strategies for Accomplishing Objective:

1. Note the availability of the blinds in the refuge brochure and other outreach materials such as the refuge website.
2. Develop a reservation system to be maintained by the refuge office.

Objective 5: Within seven years of plan adoption, develop and implement an outreach strategy in local media, on the internet and in Oklahoma tourism publications informing potential visitors of the refuge's recreation opportunities.

Current Condition: The refuge is depicted on most highway maps of Oklahoma and the refuge web site appears on any web search of "Oklahoma" and "Wildlife Refuges." Direct links to the refuge web site or mentions of the refuge on other recreation web sites are uncommon or lacking.

Rationale for Objective: Visitation to the refuge is relatively low, given its convenience to an interstate highway and location adjacent to a popular state recreation area (Foss State Park). More public information about the refuge, its wildlife resources and recreational opportunities should foster additional visitation.

Strategies for Accomplishing Objective:

1. Work with Regional Office Visitor Services staff to have direct links to refuge website included on Oklahoma State Parks web site and Bureau of Reclamation web site for Foss Reservoir.
2. Continue to regularly update refuge web site to assure completeness and timeliness.
3. Coordinate with Regional Office Visitor Services and External Affairs staff to maximize press coverage of special events, hunting seasons and other events at the refuge.
4. Request ODOT's assistance in obtaining directional signage on Interstate 40 to direct interested parties to the refuge.

Objective 6: Continue to offer a variety of public hunting opportunities on the refuge.

Current Condition: The refuge currently offers a supervised youth deer hunt, an adult general deer hunt, controlled hunts for goose and sandhill crane, and open hunting for quail and rabbit. All hunts are conducted in cooperation with ODWC, and hunters are subject to ODWC regulations.

Rationale for Objective: Hunting is one of the six priority wildlife-dependent public uses of refuges and should be offered when compatible with the refuge purpose and appropriate. Data collected from hunter check stations provide information about the

health of refuge wildlife. Hunts can also assist the refuge in achieving management objectives, such as reduction of the refuge deer population.

Strategies for Accomplishing Objective:

1. Continue to offer all appropriate hunts.
2. Periodically evaluate refuge hunting program for effectiveness and appropriateness of adding or reducing the number of hunter permits or species allowed to be hunted.
3. Periodically evaluate the cumulative effects of all wildlife related recreational activities on the amount of disturbance to wildlife populations and their habitats.

7.6 Goal 6: Partnerships and Interagency Coordination

The refuge will strive to maximize its regional impact on conservation through formal and informal agreements with tribal, state, local and private agencies and institutions with jurisdiction beyond its boundaries.

Rationale for Goal: Both the Refuge System Improvement Act and *Fulfilling the Promise* endorse close cooperation and coordination with state wildlife conservation agencies, tribal governments, non-governmental organizations and localities. The Service's policy of biological management from an ecosystem perspective recognizes that effective management of wildlife and habitat resources requires coordinated cooperation among federal, state, local and private partners. Wildlife conservation benefits a broad variety of interests on and off of the refuge, and many species of wildlife that use the refuge's habitats also use other habitats off-refuge. It is logical to work cooperatively with other entities that share an interest in wildlife.

Objective 1: Continue to coordinate habitat management programs with ODWC.

Current Condition: The refuge invites ODWC wildlife and fisheries biologists to its periodic biological and habitat reviews. ODWC is considered a "special partner" in wildlife management and is given opportunities to review and consult on all refuge plans prior to their release to the general public.

Rationale for Objective: The Refuge System Improvement Act identifies the states as special partners in fish and wildlife conservation. ODWC has local experience and expertise. Should habitats of the refuge change over time due to the effects of global climate change, working closely with ODWC would facilitate effective coordination of resources to address changed conditions throughout the refuge region.

Strategies for Accomplishing Objective:

1. Continue communication and consultation with ODWC staff at various levels.
2 Share all data collected on refuge with ODWC biologists.
3. Invite ODWC staff to meet on refuge at least annually to discuss regional biological issues and identify ways in which the refuge and state wildlife management areas can complement each other.

4. Develop visitor information brochures highlighting visitor services at the refuge that might be of interest to Foss State Park visitors. Provide these packages to Oklahoma Department of State Parks and Tourism.
5. Coordinate with the Oklahoma Wildlife and Prairie Heritage Alliance, a quasi-governmental organization developing the Great Plains Trail in conjunction with ODWC.

Objective 2: Within five years of plan adoption, develop an outreach plan to Native American Tribes with potential interests in the region's wildlife and natural resources.

Current Condition: The refuge currently conducts no active outreach to Native American tribes.

Rationale for Objective: The Refuge System Improvement Act names Native American tribes as partners with the Service in fish and wildlife conservation. Refuges and neighboring tribes should work cooperatively for conservation. The state of Oklahoma has an unusual history in that it was officially designated "Indian Territory" between 1834 and 1889. In this status, the territory became a relocation site for many tribes displaced by white settlement elsewhere in the United States. The state thus has a rich Native American history and is home to many tribes. Given these considerations, outreach to, and cooperation with, Native American tribes is quite appropriate for the refuge.

Strategies for Accomplishing Objective:

1. Work with Regional Office Native American Liaison to identify all Tribes with historical or traditional ties to the refuge region.
2. Send letters of introduction to the governments of these tribes requesting them to identify any interests they might have in working cooperatively with the refuge in wildlife management or any other shared concerns.

Objective 3: Within five years of plan adoption, develop an outreach plan to neighboring communities and residents.

Current Condition: The refuge has a fairly low profile in the neighboring towns.

Rationale for Objective: Good relations with host communities can benefit refuges in a variety of ways. As former Speaker of the U.S. House of Representatives Tip O'Neill once said, "All politics is local." Good relationships with local governments and community groups can help refuges foster good politics on a national level as well. A proactive approach to neighbor relations can avoid staff-time consuming responses to neighbor complaints.

Strategies for Accomplishing Objective:

1. Provide guided tours of the refuge to elected officials from Elk City, Clinton, Butler and Hammon, Oklahoma.
2. Investigate the potential to include refuge visitor activities in any local festivals.

3. Continue to loan propane cannons to neighboring farmers who suffer crop depredation from geese wintering at the refuge.
4. Work with Private Lands Biologist from the Oklahoma Ecological Services Field Office to identify technical and financial assistance for habitat projects on private land adjacent to the refuge through the Partners for Fish and Wildlife grant program.
5. Investigate the feasibility of forming a local refuge friends group.
6. Continue to host a youth waterfowl expo to pique local interest in waterfowl hunting.
7. Explore options for additional special events that will attract locals to the refuge.
8. Construct and equip an outdoor classroom to facilitate provision of environmental education programs.

7.7 Goal 7: Administrative, Budgetary and Staff Resources

Develop program support sufficient to provide the necessary staffing, facilitation, equipment, and operational funding to accomplish the goals of the refuges and support the mission of the National Wildlife Refuge System.

Rationale for Goal: Implementing the programs and activities proposed in this plan will require increases in refuge staff, budget and administrative support.

Objective 1: Within ten years of plan adoption, fund and hire three additional full time positions at the refuge.

Current Condition: The refuge currently employs seven full time staff, as summarized above in Section 4.1.

Rationale for Objective: A minimum staffing needs report prepared by the refuge in 1994 indicated the need for an outdoor recreation planner with collateral duty as a law enforcement ranger. Since that time law enforcement duties have been reassessed and are now considered to require a full time position. The additional biological monitoring and maintenance work proposed in this plan will also create the need for an additional biologist or biological technician.

Strategies for Accomplishing Objective:

1. Fund and hire a full-time outdoor recreation planner
2. Fund and hire a full-time biological technician/biologist.
3. Fund and hire a full-time law enforcement officer.

Objective 2: Within ten years of plan implementation, fund, design and construct a visitor contact station.

Current Condition: Visitor contact at the refuge occurs in the main administration building, which was constructed in 1961 and enlarged in the late 1990s. This building includes offices for the Refuge Manager, Wildlife Refuge Specialist, Biologist and Administrative Technician. The visitor contact area is a small reception area outside the

administrative technician's office with a few displays and a brochure rack. Refuge staff and visitors share a single, unisex restroom that does not meet accessibility standards.

Rationale for Objective: An improved visitor contact station would greatly enhance the refuge's ability to host educational and interpretive events, as well as provide effective orientation and information to refuge visitors.

Strategies for Accomplishing Objective:

1. Consult with Regional Office Visitor Services staff to determine the appropriate size and mix of displays for a visitor contact station.
2. Review recently adopted standardized visitor contact station designs.
3. Continue to request funding for a new visitor contact station in the Service Asset Maintenance Management System.

Objective 3: Concurrent with design and construction of new visitor contact station, assess the current administrative office for any needed upgrades.

Current Condition: The refuge recently upgraded its internet access to a satellite link that greatly improved its reliability and capability. The office electrical system lacks sufficient capacity to consistently power all office equipment.

Rationale for Objective: With construction of a visitor contact station, use of the administrative office building will be changing. By evaluating use of the administrative office, the refuge can identify any storage or other needs that should be incorporated in the new visitor contact station. A thorough evaluation of the administrative office should also result in addressing any operational shortfalls, such as the poor electrical power service.

Strategies for Accomplishing Objective:

1. Conduct a full assessment of existing administrative office building's suitability to fulfill refuge needs.
2. Develop construction/retrofit plans for any necessary improvements and request funding from Service Asset Maintenance Management System.

8.0 REFUGE MANAGEMENT DIRECTION: GOALS, OBJECTIVES, AND STRATEGIES, OPTIMA NWR

The following goals, objectives, and strategies are the Service's response to the issues and concerns expressed by the planning team and the public. They are expected to be implemented during the 15 year term of this plan. As the CCP is a working document, some modifications to the following objectives are anticipated during the plan term. Ultimately, the goals, objectives and strategies are designed to assist in achieving both the purposes of the refuge and the mission of the National Wildlife Refuge System.

8.1 Goal 1: Enhance Forage Resources for Migratory Birds

The refuge will continue to provide forage resources for migratory birds through an enhanced farming for wildlife program.

Rationale for Goal: As mentioned above in Section 5, Optima NWR is located within the Central Flyway and was initially established to provide protection and food for migrating and wintering waterfowl. Changes in regional hydrology between refuge proposal and the present, however, have resulted in the refuge having very limited value as waterfowl habitat. Some such habitat exists within one mile of the refuge adjacent to Optima Dam, but little waterfowl use of the refuge occurs. The refuge does provide valuable habitat for migratory song bird species and raptors.

Objective 1: Continue to farm for wildlife on up to 240 acres of the refuge annually.

Current Condition: In 2005, a co-op farmer cultivated approximately 220 acres of Optima NWR and refuge staff farmed another 26 acres.

Rationale for Objective: Growing cereal grains and other crops on the refuge provides a source of high-energy forage for migratory birds, as well as a source of green browse for wild turkey, pheasant and quail. These game birds are highly prized by hunters who frequent the refuge. Farmed areas of the refuge provide food and cover for native grassland birds that is lacking on surrounding grazed lands.

Strategies for Accomplishing Objective:

1. Continue to work with the current co-op farmer.
2. Work with the local Agricultural Extension Agent to identify potential co-op farmers as necessary.

Objective 2: Within two years of plan adoption, develop an Integrated Pest Management (IMP) plan for refuge farmland suitable for implementation by co-op farmers.

Current Condition: Agricultural pests and weeds are a problem for crop growth at the refuge. Both cooperatively farmed and force account farmed fields on the refuge have low yield, as compared to similar fields off refuge, due to restrictions on pesticides and herbicides imposed to protect wildlife health.

Rationale for Objective: *IPM* includes physical, biological and chemical treatments of the fields (ranging from hand picking pest insects off of some crops to application of pesticides and herbicides) designed to achieve a desired level of pest control with minimum use of chemical pesticides and herbicides. It is possible that IPM could increase crop yields, and thus make farming the refuge more attractive to co-op farmers, while maintaining an acceptable level of protection for wildlife using the fields.

Strategies for Accomplishing Objective:

1. Consult County Agriculture Extension Agent to identify locally prevailing agricultural pest management practices.
2. Consult with Service Regional Office and field invasive species coordinators to identify pest management practices being successfully used in other, similar refuges.
3. Consult with other refuges in the area, retired staff of refuges in western Oklahoma and the Texas Panhandle and others with local expertise to identify appropriate control measures.

Objective 3: Within seven years of plan adoption, develop protocols for evaluation of farming for wildlife on the refuge and implement surveys.

Current Condition: Approximately 240 acres of the refuge is farmed annually, primarily by co-op farmers. The cereal grains grown serve as forage for wildlife, primarily upland game birds and white-tailed deer.

Rationale for Objective: Farming for wildlife is a well established practice on National Wildlife Refuges. Most practical experience with farming for wildlife, however, is related to providing forage for high concentrations of waterfowl drawn to refuges along major flyways with ample wintering or resting habitat for waterfowl. Optima NWR is unusual among refuges in that it was planned as a waterfowl refuge, but actually is used little by waterfowl due to a much drier than anticipated hydrology. Developing a better understanding of how upland wildlife use the farmed areas on the refuge would allow informed choices about their long term use and management.

Strategies for Accomplishing Objective:

1. Invite university and other independent researchers to conduct comparative surveys of wildlife use of farmed areas, areas of healthy native prairie, and areas of disturbed prairie on the refuge.
2. Establish survey locations in farmed areas, areas of healthy native prairie, and areas of disturbed prairie on the refuge for periodic evaluation by refuge staff or qualified volunteers (staff limitations and distance from refuge headquarters at Washita NWR would likely restrict surveys to a few staff days per year).

Objective 4: Within twelve years of plan adoption, begin to implement any modifications of the refuge farming program suggested by the surveys of Objective 3.

Current Condition: The refuge farming for wildlife program is currently based upon the best judgment of the refuge manager and staff and by experience gained at other refuges where the focus of farming for wildlife is providing forage for waterfowl.

Rationale for Objective: Data from the surveys proposed in Objective 3 should allow the refuge to modify the farming for wildlife program to better serve refuge goals.

Strategies for Accomplishing Objective:

1. Review survey data and determine whether changes in the farming program are appropriate.
2. Implement any appropriate changes.
3. Continue monitoring survey areas to confirm or rebut effectiveness of changes in the farming program.
4. Periodically update and review the program in response to data collected from continued monitoring.

8.2 Goal 2: Restore Native Plant Communities

The refuge will work to restore degraded or altered natural habitats through control of exotic species and reestablishment of native plant communities.

Rationale for Goal: The Service's Ecological Integrity Policy states, in part, "We will, first and foremost, maintain existing levels of biological integrity, diversity, and environmental health at the refuge scale. Secondarily, we will restore lost or severely degraded elements of integrity, diversity, [and] environmental health at the refuge scale and other appropriate landscape scales where it is feasible and supports achievement of refuge purposes(s) and System mission." The policy defines biological diversity as the variety of life and its processes, including the variety of living organisms, the genetic differences among them, and communities and ecosystems in which they occur; biological integrity as the composition, structure, and function at genetic, organism, and community levels comparable with historic conditions, including the natural biological processes that shaped genomes, organisms, and communities; and environmental health as composition, structure, and function of soil, water, air, and other abiotic features comparable with historic condition, including the natural abiotic processes that shape the environment.

Given the policy summarized above, it is appropriate to preserve any remaining native plant communities on the refuge that are representative of the pre-agricultural past. Where it is consistent with achieving the refuge purposes, it is also appropriate to restore any altered plant communities of the refuge to a condition similar to that of the pre-agricultural past.

Objective 1: Restore an average of 35 acres of degraded grasslands per year to approximate native short- and mid-grass prairie conditions, and reintroduce native species of plants into appropriate habitats.

Current Conditions: Approximately 1,200 acres of refuge grasslands, primarily areas that were previously tilled or heavily grazed by livestock, are in a degraded condition.

Degrading factors include infestations of invasive plant species such as Johnsongrass, cheat grass, Russian thistle, and kochia.

Rationale for Objective: Restoring native prairie is consistent with the Service's Ecological Integrity Policy. Native short- and mixed-grass prairies provide important wildlife habitat for a variety of species. The loss of healthy prairie has resulted in decreases in the abundance of many wildlife species that require prairie habitat.

Strategies for Accomplishing Objective:

1. Experiment with various mowing regimes in disturbed prairie and monitor results.
2. Work with regional office invasive species coordinator to identify appropriate management techniques for Johnsongrass and other herbaceous invasive species.
3. Where areas are highly disturbed and little prairie vegetation remains, implement the following phased conversion strategy and monitor results: (1) cultivate disturbed areas; (2) use mechanical and chemical controls to eliminate or greatly reduce the success of invasive species; (3) plant small grain crops to benefit wildlife and suppress invasive species; (4) gradually convert small grain crops to native vegetation ~ convert about 5 to 7 percent of the impacted area per year.

Objective 2: Within five years of plan adoption, develop and begin implementing a restoration plan for riparian areas currently dominated by salt cedar.

Current Condition: Although the riparian area of the refuge supports a forest of mature cottonwood trees, there is very little regeneration of cottonwood. The understory of the forest and the shrub layer of open areas along drainage ways are dominated by salt cedar, an exotic species that has become established at infestation levels through much of the refuge's riparian area. Salt cedar reproduces rapidly, uses large amounts of water and excludes other species, resulting in a monotypic stand of lower value habitat than a native riparian plant community.

Rationale for Objective: Replacing monocultures of salt cedar with mixed riparian communities of cottonwood, willow and a mix of native shrubs and herbs is consistent with Service's Ecosystem Integrity Policy. The restored native plant community would provide a greater diversity of habitats for resident and migratory wildlife than the current stands of salt cedar.

Strategies for Accomplishing Objective:

1. Consult with the Regional Office Invasive Species Coordinator, staff of Bosque del Apache NWR, and others with experience in salt cedar control to identify management treatments suitable for Optima NWR.
2. Consult with Oklahoma Forestry Division and NRCS to identify local sources of plant material (cottonwood and willow poles, shrub seedlings, and grass seed mixes) suitable for vegetating treated areas.
3. Using methods identified in the previous two strategies, clear areas of salt cedar and plant cottonwood saplings, shrub seedlings and herbs.

4. Conduct regular surveys of the restoration areas and provide appropriate maintenance.

Objective 3; Within five years of plan adoption, conduct a baseline survey of refuge habitat and wildlife resources.

Current Condition: No full baseline survey of refuge wildlife and habitat resources has been conducted. The refuge has a fairly complete bird list compiled by former refuge biologists with interest and expertise in birds. Southwestern Oklahoma State University is currently collecting and identifying plants of the refuge. Information regarding the distribution, diversity and abundance of mammals, reptiles and amphibians on the refuge is limited primarily to anecdotal information and observations incidental to other work on the refuge.

Rationale for Objective: More complete knowledge of the wildlife species and habitats present at the refuge will foster effective management planning.

Strategies for Accomplishing Objective:

1. Design appropriate baseline surveys.
2. Initiate discussions with Northwestern Oklahoma and Panhandle State Universities regarding use of the refuge as a field laboratory in exchange for their participation in wildlife and habitat baseline surveys. Continue surveys by Southwestern Oklahoma State University.
3. Solicit assistance in conducting surveys from qualified volunteers.
4. Implement surveys.

8.3 Goal 3: Mitigate Highway Impacts

The refuge will investigate the effects of an existing high speed highway on refuge habitats and wildlife populations. Where feasible, the refuge will mitigate these effects.

Rationale for Goal: The ecological effects of traffic and road infrastructure have garnered increasing attention in recent years (Forman et al., 2003). At Optima NWR, a major regional highway (Highway 3/412) carries high-speed traffic through the refuge. Despite a large, high bridge over the middle part of the refuge crossing, initially designed to allow boat passage on the proposed reservoir, this raised highway fragments the refuge.

Objective 1: Within six years of plan adoption, design and implement a survey of wildlife mortality from vehicle strikes on Highway 3/412.

Current Condition: Data on wildlife impacts of the highway are limited or missing. Remains along the road suggest that both terrestrial animals and birds are struck fairly frequently by traffic on the highway.

Rationale for Objective: Little is known about the highway's direct effect on refuge wildlife and habitat resources.

Strategies for Accomplishing Objective:

1. Conduct literature review on road effects upon wildlife and habitats to identify potential areas of inquiry.
2. Request proposals for academic research on habitat fragmentation effects, road runoff effects and other potential impacts on native wildlife and habitats.
3. Contact Oklahoma Department of Transportation maintenance crews to get estimates of road killed animals large enough to require removal from the road.

Objective 2: Within ten years of plan adoption, implement mitigation measures for effects identified under Goal 3, Objective 1, above.

Current Condition: Little is known about the exact impacts of Highway 3/412 on refuge wildlife and habitats. Refuge management does not currently address highway impacts.

Rationale for Objective: Should identifiable detrimental impacts of the Highway 3/412 be documented, the refuge should address them.

Strategies for Accomplishing Objective: To be developed when information is available.

8.4 Goal 4: Cultural Resources

Identify, protect, and interpret the prehistoric and historic cultural resources of Optima National Wildlife Refuge for the benefit of present and future generations.

Rationale for Goal: The Archaeological and Historic Preservation Act of 1974, as amended, mandates protection of archaeological and historical artifacts on federal lands and requires that federal land managers develop plans to identify such resources. Interpreting the history and prehistory of Optima NWR should enhance visitors' overall experience at, and appreciation of, the refuge.

Objective 1: Continue to protect cultural and historic resources of Optima NWR.

Current Condition: No comprehensive survey of refuge cultural and historic resources has been undertaken. Artifacts on the refuge are protected by the land's status as a federal reservation where no land disturbance will occur without prior surveys.

Rationale for Objective: Protecting cultural and historic resources is consistent with federal law and NWRS policy.

Strategies for Accomplishing Objective:

1. Conduct on-site surveys prior to any refuge project that will disturb the soil surface.
2. Request funding for comprehensive cultural and historic overview of the refuge, including secondary source review and on-site sampling of known or suspected cultural and historic sites.

8.5 Goal 5: Wildlife Dependent Recreational Uses

The refuge will increase public awareness and appreciation of refuge wildlife resources by improving outreach, interpretive materials and recreational facilities.

Rationale for Goal: The Refuge System Improvement Act identifies six priority wildlife dependent public uses of National Wildlife Refuges and states that these uses should be facilitated on refuges when they are compatible with the refuge purpose. The uses are hunting, fishing, wildlife observation and photography, environmental education and interpretation. Well developed wildlife dependent outdoor recreation opportunities and educational/interpretive programs benefit the refuge visitor and the surrounding communities, while also enhancing the refuge's popularity and fostering public support for the refuge and its programs.

Objective 1: Within five years of plan adoption, develop an outreach plan to local schools and provide educational resource materials suitable for use in area schools.

Current Condition: The refuge currently interfaces very little with area schools due to remoteness of refuge staff, based at Washita NWR, from the refuge area.

Rationale for Objective: Environmental education is one of the six wildlife dependent priority public uses of the National Wildlife Refuge System. Active outreach to schools will support the provision of this use and will improve local knowledge and appreciation of Optima NWR.

Strategies for Accomplishing Objective:

1. Identify suitable environmental publications and acquire copies to donate to local schools for their libraries (e.g., books on local natural history and wildlife, lesson plans and other environmental education materials, refuge brochures, etc.).
2. Meet with area school principals and teachers to raise awareness of the refuge in schools and identify educational needs or interests the refuge could fill.
3. Seek opportunities to conduct teacher workshops jointly with ODWC staff.

Objective 2: Contingent on completion of the Great Plains Trail by the Oklahoma Wildlife and Prairie Heritage Alliance, develop complementary refuge visitor services.

Current Condition: The Oklahoma Wildlife and Prairie Heritage Alliance, a quasi-governmental organization, has proposed developing the Great Plains Trail of Oklahoma. This trail would provide guidance on wildlife viewing opportunities in western Oklahoma. Optima NWR is a featured attraction in the proposed trail's Playa Lakes Loop.

Rationale for Objective: The Great Plains Trail, when implemented and advertised, should increase public awareness of, and interest in Optima NWR. The refuge could complement the ecotourism promotion efforts of the Oklahoma Wildlife and Prairie Heritage Alliance by developing informational materials and visitor amenities.

Strategies for Accomplishing Objective:

1. Work with Regional Office Visitor Services staff to design, print and distribute a new refuge brochure highlighting wildlife observation opportunities at the refuge. This brochure would be distributed by the Oklahoma Wildlife and Prairie Heritage Alliance, as well as the Service.
2. Develop parking improvements at strategic points around the refuge perimeter so that visitors can safely park away from high-speed traffic on State Highway 3/412.
3. Develop a trail network for recreational hiking to view wildlife and construct signage sufficient to keep visitors on the trails.
4. Work with Regional Office Visitor Services staff to design attractive, durable and informative signs, or other appropriate media, to interpret refuge resources of interest to visitors. These would be located both at parking areas and along trails.
5. Work with Regional Office Visitor Services staff to identify vendors to manufacture signs that will withstand weather and resist vandalism. This is particularly important at this remote, unstaffed refuge.

Objective 3: Continue to offer a variety of public hunting opportunities on the refuge.

Current Condition: The refuge currently offers an archery deer and turkey hunt, a spring turkey hunt, and general hunts for pheasant, quail, dove, and rabbit. All hunts are conducted in cooperation with ODWC, and hunters are subject to ODWC regulations.

Rationale for Objective: Hunting is one of the six priority wildlife-dependent public uses of refuges, and should be offered when compatible with the refuge purpose.

Strategies for Accomplishing Objective:

1. Continue to offer all appropriate hunts.

8.6 Goal 6: Partnerships and Interagency Coordination

The refuge will strive to maximize its regional impact on conservation through formal and informal agreements with tribal, state, local and private agencies and institutions with jurisdiction beyond its boundaries.

Rationale for Goal: Both the Refuge System Improvement Act and *Fulfilling the Promise* endorse close cooperation and coordination with state wildlife conservation agencies, tribal governments, non-governmental organizations and localities. The Service's policy of biological management from an ecosystem perspective recognizes that effective management of wildlife and habitat resources requires coordinated cooperation among federal, state, local and private partners. Wildlife conservation benefits a broad variety of interests on and off the refuge, and many species of wildlife that use the refuge's habitats also use other habitats off-refuge. It is logical to work cooperatively with other entities that share an interest in wildlife.

Objective 1: Within three years of plan adoption, propose that Optima NWR become a research host for biological field research by partner agencies and organizations.

Current Condition: The refuge has hosted a variety of field research in the past. Southwestern Oklahoma State University has conducted plant collection on the refuge and used the refuge as an outdoor classroom. The University of Central Oklahoma is currently conducting a study on soil disturbance at the refuge.

Rationale for Objective: Research of the refuge's natural resources can benefit the Service by providing new knowledge of the refuge. Inviting outside agencies and organizations to conduct research is consistent with calls for close cooperation and coordination in the Refuge System Improvement Act and *Fulfilling the Promise*.

Strategies for Accomplishing Objective:

1. Solicit proposals for on-refuge field research from ODWC, area Native American tribes, universities within the refuge region and non-governmental natural resource organizations.
2 Review the resulting proposals to verify that the potential research would be compatible with refuge goals.
3. Develop MOU for appropriate research, assuring that research findings will be available to the refuge.

Objective 2: Continue to coordinate habitat management programs with ODWC.

Current Condition: The refuge invites ODWC wildlife and fisheries biologists to its periodic biological and habitat reviews. ODWC is considered a "special partner" in wildlife management and is given opportunities to review and consult on all refuge plans prior to their release to the general public.

Rationale for Objective: The Refuge System Improvement Act identifies the states as special partners in fish and wildlife conservation. ODWC has local experience and expertise.

Strategies for Accomplishing Objective:

1. Continue communication and consultation with ODWC staff at various levels.
2 Share all data collected on refuge with ODWC biologists.
3. Invite ODWC staff to meet on refuge at least annually to discuss regional biological issues and identify ways in which the refuge and state wildlife management areas can complement each other.

Objective 3: Within five years of plan adoption, develop an outreach plan to Native American tribes with potential interests in the region's wildlife and natural resources.

Current Condition: In the early 1980s members of the Comanche Nation conducted a Golden Eagle release program at Optima NWR. William Voelker, Director of Sia, the Comanche Nation Ethno-Ornithological Initiative, reports that Golden Eaglets bred in captivity were "hacked out" (term for gradual acclimation to the wild and release of captive

bred raptors) at the refuge. A flightless adult Golden Eagle kept within a fenced enclosure served as a foster mother to the eaglets and would call them back to the enclosure for feeding while they became acclimated to life in the wild. Eventually the eaglets were successfully released into the wild (pers. comm., 2005). William Voelker expressed interest in conducting raptor surveys on the refuge. The refuge currently conducts no active outreach to Native American tribes.

Rationale for Objective: The Refuge System Improvement Act names Native American tribes as partners with whom refuges should work cooperatively for conservation of fish and wildlife. The state of Oklahoma has an unusual history in that it was officially designated "Indian Territory" between 1834 and 1889. In this status, the territory became a relocation site for many tribes displaced by white settlement elsewhere in United States. The state thus has a rich Native American history and is home to many tribes. Given these considerations, outreach to, and cooperation with Native American tribes is quite appropriate for the refuge.

Strategies for Accomplishing Objective:

1. Work with Regional Office Native American Liaison to identify all tribes with historical or traditional ties to the refuge region.
2. Send letters of introduction to the governments of these tribes requesting them to identify any interests they might have in working cooperatively with the refuge in wildlife management or any other shared concerns.

Objective 4: Within five years of plan adoption, develop an outreach plan to neighboring communities and residents.

Current Condition: The refuge has a fairly low profile in the neighboring towns.

Rationale for Objective: Good relations with host communities can benefit refuges in a variety of ways. A proactive approach to neighbor relations can avoid staff-time consuming responses to neighbor complaints.

Strategies for Accomplishing Objective:

1. Provide guided tours of the refuge to elected officials from Hardesty, Hooker and Guymon.
2. Investigate the potential to include refuge visitor activities in any local festivals.
3. Work with Private Lands Biologist from the Oklahoma Ecological Services Field Office to identify technical and financial assistance for habitat projects on private land adjacent to the refuge through the Partners for Fish and Wildlife grant program.

8.7 Goal 7: Administrative, Budgetary and Staff Resources

Develop program support sufficient to provide the necessary staffing, facilities, equipment, and operational funding to accomplish the goals of the refuges and support the mission of the National Wildlife Refuge System.

Rationale for Goal: Implementing the programs and activities proposed in this plan will require increases in refuge staff, budget and administrative support.

Objective 1: Within three years of plan adoption, evaluate each building in the refuge administrative area for modernization or replacement.

Current Condition: There is a small cluster of administrative buildings west of State Highway 3/412 near the southern refuge boundary. These are used for equipment and supply storage and for temporary office and quarters for staff engaged in multi-day operations at the refuge. The condition of the buildings varies, but none is in good or excellent condition.

Rationale for Objective: All the refuge buildings need some upgrades or repairs if they are to be used by visiting staff. By conducting an overall evaluation of the building stock, refuge management will be able to determine the most cost effective use of funds in building renovation or removal.

Strategies for Accomplishing Objective:

1. Regional Office engineering staff will conduct a structural evaluation of the buildings, including considerations of pathways for rodent entry.
2. Refuge management will conduct a needs review to determine how much building space is necessary on the refuge.
3. Using the results of these reviews, obtain cost estimates for upgrading the necessary buildings. Upgrades should include rodent-proofing all buildings, repairing any leaks, assuring that electrical systems are up to standard and installing sanitary facilities including potable water and flush toilets in at least one building.
4. Submit funding requests for necessary upgrades/repairs.
5. Assure that funding exists for ongoing maintenance of refuge buildings.

Objective 2: Within six years of plan adoption, complete review of refuge equipment and its suitability to implement management changes identified in Goal 2.

Current Condition: The refuge currently owns two tractors, a brush hog, planting drills and a cultivator.

Rationale for Objective: As refuge habitat management is reviewed and reevaluated, particularly farming for wildlife practices, new or different equipment needs may arise.

Strategies for Accomplishing Objective:

1. Identify equipment requirements of all existing and proposed refuge management programs.
2. Evaluate condition of existing equipment and its suitability to accomplish those programs.
3. Submit Service Asset Maintenance Management System funding requests for any needed equipment.

9.0 PLAN IMPLEMENTATION

Plan objectives are intended to be accomplished over the next 15 years. New management activities will be phased in over time. Implementation of these will be contingent upon results of biological inventories, monitoring and evaluation, funding, staffing, and regional or national service directives. This section identifies resource projects, staffing, partnership opportunities, step-down management plans, and the CCP monitoring and evaluation plan.

9.1 Resource Projects

Listed below is a summary of major resource project needs addressing the goals and objectives of this CCP. Each project summary includes links to the CCP goals and objectives for Washita (Chapter 7, above) and Optima (Chapter 8, above) that relate to each resource project area over the next 15 years. This list only reflects the basic needs identified by the planning team, given available information, and is subject to modification depending on future conditions, needs and cost adjustments.

Project 1 Habitat Management Plan

Develop habitat inventory and management plans for each refuge which involve the vegetative cover classification recently completed for both refuges, delineation of major habitats and lists of plant species associated with each habitat. Implement habitat monitoring programs for grassland habitats targeted for restoration activities. Integrate Fire Management Plan goals and objectives with those of the CCP to achieve CCP goals and objectives.

Planning Links:
Washita: Goal 1, Objectives 1, 2, 3, 4, and 5; Goal 2, Objectives 1, 2, and 3; Goal 3, Objectives 1 and 2; Goal 6, Objective 1
Optima: Goal 1, Objectives 1, 2, 3, and 4; Goal 2, Objectives 1, 2, and 3; Goal 3, Objectives 1 and 2; and Goal 6, Objective 2

Project 2 Inventory and Monitoring Plan

Current inventory of baseline biological data is needed for both Washita and Optima NWRs. Wildlife population inventory data can be used to update population management plans and refine management actions. Refuge wildlife census/monitoring protocols will be evaluated through the ongoing biological review process.

Planning Links:
Washita: Goal 2, Objectives 3; Goal 3, Objective 2; Goal 6, Objective 1
Optima: Goal 1, Objecive 3; Goal 2, Objective 3; Goal 3, Objective 1; Goal 6, Objectives 1 and 2

Project 3 Archaeological Resources Overview

Complete a secondary source review of recorded historical and archaeological resources and catalogue all known on-site artifacts for both refuges. This project will assist in meeting cultural resource mandates.

Planning Links:
Washita: Goal 4, Objective 2
Optima: Goal 4, Objective 1

Project 4 Visitor Services Plan

A Visitor Services Plan is needed for these two refuges. Related items in the CCP include trail development, installation of informational, interpretive and directional signs; development of visitor interpretive displays at the Washita visitor contact station; development of classroom curriculum materials; development of brochures; and construction of a dedicated visitor contact station at Washita.

Planning Links:
Washita: Goal 5, Objectives 1, 2, 3, 4 ,5, and 6; Goal 6, Objective 3; Goal 7, Objectives 1 and 2
Optima: Goal 5, Objectives 1, 2, and 3; Goal 6, Objective 4; Goal 7, Objective 1

9.2 Current and Proposed Funding and Personnel

Current Staff:

All staff for both refuges is based at Washita NWR. The current staff level is seven permanent full time employees (PFT).

•	Refuge Manager	GS-12	PFT
•	Wildlife Refuge Specialist	GS-11	PFT
•	Wildlife Biologist	GS-9	PFT
•	Administrative Technician	GS-7	PFT
•	Maintenance Worker	WG-8	PFT
•	Maintenance Worker	WG-8	PFT
•	Maintenance Worker	WG-7	PFT

Table 10. Current Base Funding (Refuge Totals for Washita and Optima Combined)

Fiscal Year	O&M 1261 &1263*	MMS 1262AM & 1262 MAIN*	Total
2001	359,000	72,000	431,000
2002	353,577	72,000	425,577
2003	383,350	157,000	540,350
2004	440,500	138,000	578,500
2005	387,500	151,000	538,500
2006	297,400	323,338	620,738

*Description of funding categories:

1261 funds are used for fixed costs, such as salaries, supplies, mandatory training/travel, and operational activities.

1262 AM funds are used to maintain equipment and facilities.

1262 (MMS) funds are restricted to deferred maintenance/replacement of refuge facilities and infrastructure that cannot be accomplished with Operations and Maintenance (O&M) funding.

1262 MAIN funds are used for fixed costs such as salary of maintenance staff and utilities.

1263 funds are used to support visitor services activities.

Proposed Staff

To accomplish the goals and objectives of this CCP, the following new positions would be required:

•	Outdoor Recreation Planner	GS-7/9	PFT
•	Biological Technician	GS-7	PFT
•	Law Enforcement Ranger	GS-7/9	PFT

9.3 Partnership Opportunities

There are many opportunities to partner with state and federal governmental agencies, NGOs, private landowners, and local conservation groups to combine efforts on resource issues or projects that would be mutually beneficial to all with the greatest benefits to the area's natural resources.

- Establish partnerships though cooperative agreements with Oklahoma State University, Panhandle State University, Southwestern Oklahoma State University and other institutions of higher learning to provide seasonal student interns to assist with refuge biological programs, GIS mapping, habitat management

programs and education/outreach efforts. In the case of Optima NWR, there may be an opportunity to host university field research by professors and graduate schools.

- Continue to work cooperatively with ODWC. State staff participates in refuge biological reviews, provides fish for the refuge's use of moist soil management areas as fish nurseries, and cooperatively administers refuge hunting programs. Potential mutual benefits of enhanced cooperation with ODWC include: enhanced management of refuge prairie dog colony through the refuge serving as a recipient of relocated dogs, volunteers to share duties associated with visitor services and maintenance on the refuge, enhanced biological programs and management strategies of habitats and wildlife populations on federal and state lands, shared research opportunities and information that would mutually benefit wildlife management on federal and state lands, and contribution of coordinated efforts to local law enforcement coverage for game violations.

- Cooperate with the Oklahoma Prairie and Wildlife Heritage Alliance in development of the Great Plains Trail. Coordinated efforts with the Alliance would enhance the visibility of both refuges, while providing additional attractions for eco-tourism in western Oklahoma.

- Maintain and strengthen partnerships with private landowners to limit introduction of exotic species to the refuge from adjacent private lands and mitigate crop depredation by wildlife attracted to the refuge. By working cooperatively to control invasive exotic species such as salt cedar, with the refuge providing up-gradient landowners technical assistance and sharing labor in exchange for access to private land, both parties will benefit from reductions in the species. The refuge will benefit in good will from efforts to assist landowners in hazing geese and cranes from private cropland, such as loan of propane cannons.

- Continue to seek out opportunities for cooperative wildlife research with tribes and NGOs. Sia, the Comanche Nation Ethno-Ornithological Initiative, has banded and hacked-out raptors on Optima NWR in the past, and is interested in continued cooperation. This and similar efforts can add to the refuge's wildlife database.

- Continue cooperative efforts with Custer County and Foss State Park for coordinated emergency services at Washita, agreements with local volunteer fire departments, and the Oklahoma Department of Transportation.

- Continue to maintain cooperative agreements with local farmers to operate farming for wildlife on both refuges.

Maintaining and developing partnerships will enable the refuges to achieve their goals and objectives, minimize costs, share funding and bridge relationships with other private and public interests. To maintain and enhance wildlife populations outside the refuges, the Service will focus its efforts on continuing to develop partnerships with landowners, Oklahoma resource agencies, and interested conservation and sportsmen groups. Although the Service does not have management responsibilities for lands outside the National

Wildlife Refuge System, it is important to articulate wildlife and habitat needs area wide. Collaboration with colleges and universities and with conservation organizations will enable the refuge to carry on its plan for research, monitoring, and education. To create awareness and expand environmental education efforts in the community, partnerships will be established or expanded with organizations and school systems.

9.4 Step-Down Management Plans

The following is an annotated list of step-down management plans that are required for the programs implemented at Washita and Optima NWRs. Many of the plans listed were prepared prior to 1998. These should be considered due for an update.

9.4.1 Completed Plans

The following documents have been completed, some are in need of review and update:

Wildlife Inventory and Monitoring Plan

Describes specific wildlife inventory activities and techniques to be conducted to monitor wildlife populations, including specific species population objectives, census/survey methods, data analysis, and reporting requirements. Completed in 1986, this plan needs to be thoroughly reviewed and updated (both refuges). This plan is now known as the Inventory and Monitoring Plan. An updated plan can include plant communities and plant species, as well as wildlife.

Fire Management Plan

Describes the planned use of prescribed fires on the refuge, including purpose of the treatment, location and description of the treatment area, alternatives, prescriptions, fire suppression methods, reporting/monitoring requirements and mechanical or chemical vegetation management for fuels control. Plan approved in 2001 (both refuges).

Hunt Plan

Describes hunting to be permitted on the refuge, monitoring of hunter success, and the objectives of hunting. Plan adopted in 1986 and updated through compatibility determinations for hunting in 1994, 2001, and 2006 (both refuges).

Law Enforcement Plan

Describes refuge law enforcement program guidelines, including identification of problems, solutions, objectives and management strategies to achieve effective law enforcement on the refuge. Completed in 1986, this plan needs to be thoroughly reviewed and updated (both refuges).

Quarters Management Plan

Washita NWR has two quarters buildings. One houses refuge staff, while the other has been converted into an office for the Zone Law Enforcement Officer. This plan describes the histories of both buildings. Approved in 1991, this plan is overdue for an update.

Cropland Management Plan

Describes the farming for wildlife program. Plan adopted in 1987 and due for an update (both refuges).

Animal Control Plan

This plan was adopted in 1970 and is no longer implemented on the refuge.

Station Safety Plan

Describes actions and improvements necessary to make the station's facilities and operations compliant with federal occupational health and safety standards and other applicable regulations. The Refuge Station Safety Plan for Washita NWR was adopted in 1985 and is due for review and update. The Refuge Safety Plan for Optima NWR was adopted in 1990 and is also due for review and update.

Waterfowl Disease Contingency Plan

Describes actions and procedures for identifying, reporting and responding to outbreaks of avian botulism, fowl cholera, etc. The Washita NWR plan was adopted in 1984. A multi-state Cooperative Plan covering both refuges was adopted in 1998.

Spill Prevention, Control and Countermeasure Plan

Describes measures for avoiding spills of hazardous materials, controlling spread of such materials in the event of spill and remediation measures to be taken in the event of a spill. Plan adopted in 2002 (both refuges).

Aviation Mishap Plan

Describes actions to be taken in the event of an aircraft emergency. Plan adopted in 2000 (both refuges).

Crowd Control Plan

This plan was adopted in 1970 and should be considered obsolete.

Research Plan – Biological Investigations

This plan was developed for Washita NWR in 1961. A new plan for both refuges is necessary.

9.4.2 Plans to be Completed in the Future

Habitat Management Plan

Describes the most appropriate management strategies for habitat protection, enhancement, and restoration. Emphasizes specific habitats and areas for management activities. Provides monitoring protocols and evaluation criteria to verify efficacy of programs (draft plan completed 2005).

Integrated Pest Management Plan

Establishes acceptable levels of insect and plant pests on the refuges and describes means of managing pest populations to those levels, includes mechanical, chemical and biological control measures.

Visitor Services Management Plan

Addresses specific wildlife related public recreation issues and needs. This plan will identify opportunities for visitors to enjoy and appreciate fish, wildlife and other resources. As a result, the public will develop an understanding and appreciation for the mission of the Service and the National Wildlife Refuge System. The plan will identify appropriate/quality recreational opportunities that are conducted in a safe and cost-effective manner, develop and implement a quality environmental education program, interpret key resources and issues, and build volunteer programs and partnerships with refuge support groups. This plan would include the refuge sign plan.

Cultural Resources Management Plan

Identifies areas with cultural historic importance and provides methods for the management of these resources. The plan also identifies areas of potential significance and outlines site information so managers can make better decisions regarding development or management activities. A comprehensive cultural resource inventory is a prerequisite to the development of this plan, as land management activities, including public access, could impact unidentified resources.

9.5 Compatibility Determinations

Compatibility determinations are written to determine that specific uses of a refuge are compatible with the purpose for which the refuge was established and the purposes of the National Wildlife Refuge System. During the CCP or step-down management plan process, the refuge manager typically reviews existing compatibility determinations for continued applicability and prepares new compatibility determinations for any new uses, specific use programs or groups of related uses proposed in the plan.

Compatibility determinations in existence prior to the effective date of the compatibility policy will remain in effect until and unless modified and will be subject to periodic reevaluation. The Service does not initiate or permit a new use of a National Wildlife

Refuge, nor does it expand, renew, or extend an existing use, unless and until such use is determined to be compatible with the refuge purpose and not to pose a public safety hazard.

The Service does not require compatibility determinations for refuge management activities except for "refuge management economic activities." Examples of refuge management activities that do not require a compatibility determination include: prescribed burning; water level management; invasive species control; routine scientific monitoring, studies, surveys, and censuses; historic preservation activities; law enforcement activities; and maintenance of existing refuge facilities, structures, and improvements. Refuge management economic activities requiring a compatibility determination are those that produce a commodity with economic value, such as raising crops for harvest and sale in a farming for wildlife program or trapping furbearers for their pelts.

National Environmental Policy Act (NEPA) compliance is required for all compatibility determinations, as is opportunity for public review. The compatibility determinations included in this plan are covered by the Environmental Assessment attached to the plan.

Compatibility determinations for all public uses and refuge management economic uses occurring at Washita and Optima NWRs were reviewed during the CCP process. No ongoing uses were found incompatible.

9.5.1 Compatibility Determinations for Washita NWR

Compatibility determinations were reviewed for eight uses at this refuge: farming, haying and chemical weed management (a refuge management economic activity); wildlife observation and photography; recreational fishing and boating; migratory bird hunting; upland game hunting; deer and feral hog hunting; turkey hunting; and stocking fish (a cooperative activity with ODWC). The compatibility determinations detailed below, which were completed in 2006 (turkey hunting), 2005 (stocking fish), 2001 (deer and hog hunting), and 1994 (all others), were reviewed through the CCP planning process and determined to be current and applicable (see Appendix J for the full text of compatibility determinations).

Compatibility Determination for Farming, Haying, and Chemical Weed Management, 1994

Determined that these activities are compatible with the goals and objectives of the refuge. Approximately 2,000 acres of farmland on the refuge is cultivated annually, by a combination of force account and cooperative farmers. Farming the refuge is consistent with supplying a source of green browse and grains to support the large numbers of migratory birds drawn to the refuge.

Compatibility Determination and Recreation Act Funding Analysis: Wildlife Observation and Photography, 1994

Determined that these activities are compatible with the goals and objectives of the refuge. Refuge visitors engaged in wildlife observation and photography have very little impact on refuge wildlife and other resources, and gain appreciation of the refuge. These wildlife-dependent activities are thus justifiable and compatible with the refuge purposes.

Compatibility Determination and Recreation Act Funding Analysis: Recreational Fishing and Boating, 1994

Determined that these activities are compatible with the goals and objectives of the refuge. More than one half of the annual visitors to the refuge come to fish the Washita River or Foss Reservoir. Fishing is a justifiable wildlife-dependent activity and boating is used to facilitate fishing. Restrictions on boat use, including closing the refuge waters to boats from October 15 to March 14 each year and prohibiting waterskiing, protect refuge resources.

Compatibility Determination and Recreational Act Funding Analysis: Migratory Bird Hunting, 1994

Determined that this activity is compatible with the goals and objectives of the refuge. The refuge permits approximately 400 hunters each year, who harvest about 200 geese and typically fewer than 6 sandhill cranes. This small harvest of the large refuge populations of geese, estimated at 35,000 to 78,000, and cranes, typically peaking at near 7,000, is a justifiable wildlife-dependent use of the refuge.

Compatibility Determination and Recreational Act Funding Analysis: Upland Game Hunting, 1994

Determined that this activity is compatible with the goals and objectives of the refuge. The refuge typically hosts 600 upland game hunters each year, who harvest bobwhite quail, rabbit and other upland game on 2,392 acres on the northern one-third of the refuge. Impacts and costs to the refuge of this activity are very minor, and the activity is a justifiable wildlife-dependent public use of the refuge.

Compatibility Determination and Recreational Act Funding Analysis: Deer and Feral Hog Hunting, 2001

Determined that this activity is compatible with the goals and objectives of the refuge. The refuge typically hosts up to 75 hunters each year, who harvest deer from locations where deer numbers are high. This activity is necessary to maintain the populations of these animals within prescribed limits and reduce negative impacts to other species and the habitat. Costs to the refuge of this activity are minor (and are offset by fees collected), and the activity is a justifiable wildlife-dependent public use of the refuge.

Compatibility Determination: Fish Stocking, 2005

Determined that this activity is compatible with the goals and objectives of the refuge. Fish stocking in the refuge wetlands managed for moist soil plant production was proposed by ODWC staff in 2004. Areas would be left flooded during the spring and summer when they are not heavily used by migratory waterfowl, and native fish obtained from the ODWC or Service hatcheries would be stocked in the basins. Fish grown in the relatively predator-free environment would then be released into the Washita River. This use will enhance fisheries in the Washita River and Foss Reservoir, and is a justifiable use of refuge resources.

Compatibility Determination and Recreational Act Funding Analysis: Turkey Hunting, 2006

Determined that this activity is compatible with the goals and objectives of the refuge. The refuge typically hosts up to seven hunters each year, who harvest turkeys from locations where their numbers are high. This activity is primarily recreational rather than biological control. Costs to the refuge of this activity are minor (and are offset by fees collected), and the activity is a justifiable wildlife-dependent public use of the refuge.

9.5.2 Compatibility Determinations for Optima NWR

Compatibility determinations were reviewed for four uses at this refuge: farming and chemical weed management; upland game and migratory bird hunting; archery deer hunting; and wildlife observation and photography. The compatibility determinations detailed below, which were completed in 1994, were reviewed through the CCP planning process and determined to be current and applicable (see Appendix J for the full text of compatibility determinations).

Compatibility Determination for Farming and Chemical Weed Management, 1994

Determined that these activities are compatible with the goals and objectives of the refuge. Approximately 240 acres of farmland on the refuge is cultivated annually, using "dry land farming" techniques, primarily by cooperative farmers. A small amount of force account farming also occurs. Anticipated numbers of waterfowl, cranes and geese have not been attracted to the refuge, due to changed regional hydrology, but many resident wildlife species and migratory birds use the refuge farm fields as a source of browse and grains. Farming the refuge is consistent with the refuge purpose.

Compatibility Determination and Recreational Act Funding Analysis: Upland Game and Migratory Bird (Dove) Hunting, 1994

Determined that these activities are compatible with the goals and objectives of the refuge. Typically about 600 hunting visits to the refuge occur each year. Popular quarries are pheasant, quail (bobwhite and scaled), rabbits and dove. Hunting is a justifiable wildlife-dependent use of the refuge.

Compatibility Determination and Recreational Act Funding Analysis: Big Game Hunting, 1994

Determined that this activity is compatible with the goals and objectives of the refuge. The refuge initiated archery-only deer and fall turkey hunts in 1986. The spring turkey hunt allows both shotgun and archery hunting. Typically 600 refuge visits occur for the fall hunts and 150 visits for the spring hunt. Impacts and costs to the refuge of this activity are very minor, and the activity is a justifiable wildlife-dependent public use of the refuge.

Compatibility Determination and Recreation Act Funding Analysis: Wildlife Observation and Photography, 1994

Determined that these activities are compatible with the goals and objectives of the refuge. Refuge visitors engaged in wildlife observation and photography have very little impact on refuge wildlife and other resources, and gain appreciation of the refuge. Most refuge visitors participating in these activities remain in their vehicles and view wildlife from county roads adjacent to the refuge boundary. The level of use for wildlife observation and photography is very low. These wildlife-dependent activities are justifiable and compatible with the refuge purposes.

9.6 Monitoring and Evaluation of the CCP

If the plan is to be a useful measure of the achievements of the refuge programs and useful to future refuge managers, documentation needs to be a priority to determine whether the objectives are achieved within the time frame of this plan. The existing refuge programs, current databases, and guidelines for monitoring and evaluation of each step-down program plan needs to be considered in the review, evaluation, and amendments of the CCP. Implementation of the CCP will require periodic review and adjustments to amend the plan so it will continue to be effective as the programs progress.

Where possible, the CCP identifies and incorporates monitoring and evaluation activities as objectives or strategies under the general goals for the refuge. Specific guidelines for monitoring and evaluation will vary by program and need to be developed and addressed in the appropriate step-down plan.

9.7 Plan Amendment and Revision

The Washita and Optima National Wildlife Refuge CCP is a dynamic plan. While it will serve as a guide for overall refuge direction, it will be adjusted to consider new and better information, ensuring that refuge activities best serve the established purposes of these refuges and the mission of the National Wildlife Refuge System. The CCP will be reviewed every five years and monitored continuously to ensure the developed management actions support the goals and objectives of Washita and Optima NWRs.

This CCP will be informally reviewed by refuge staff while preparing annual work plans and updating the Refuge Annual Performance Planning (RAPP) system database. It may also be reviewed during routine inspections or programmatic evaluations. Results of the reviews may indicate a need to modify the CCP. The monitoring of objectives is an integral

part of the plan, and management activities may be modified if desired results are not achieved. If minor changes are required, the level of public involvement and associated NEPA documentation will be determined by the project leader. This CCP will be formally revised at least every 15 years.

Washita and Optima National Wildlife Refuges
Draft Comprehensive Conservation Plan

Environmental Assessment

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ENVIRONMENTAL ASSESSMENT

1.0 PURPOSE AND NEED OF THE PROPOSED ACTION

The proposed action consists of adoption and implementation of a Comprehensive Conservation Plan (CCP) for the Washita and Optima National Wildlife Refuges (NWR). The proposed plan consists of a number of objectives and strategies that support achievement of management goals of both refuges.

The purpose of the proposed action is to outline a management direction for these refuges during the next 15 years, ultimately furthering the establishing purposes of each refuge and the mission of the National Wildlife Refuge System.

> Washita NWR was established on April 16, 1961 for the following purpose: *"... for the conservation, maintenance, and management of wildlife resources thereof, and habitats thereon, ..."* 16 U.S.C. (Fish and Wildlife Coordination Act).
>
> Optima NWR was established in 1975 under provisions of the Fish and Wildlife Coordination Act, by agreement between the Department of Interior and the U.S. Army Corps of Engineers (Corps). The original purpose for the refuge was to provide protection and food for migratory waterfowl of the Central Flyway. Optima NWR is currently managed for resident wildlife and migratory birds. The lack of water has reduced the potential for waterfowl management.
>
> The mission of the National Wildlife Refuge System is to "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, 1997).

The Refuge Recreation Act (16 U.S.C. 460-1) states that refuges are "suitable for incidental fish and wildlife-oriented recreational development, the protection of natural resources, and the conservation of endangered or threatened species."

This CCP proposes a planned management program to implement actions that meet the operational needs of the refuge to conduct management activities to benefit wildlife, particularly the fall, winter, and spring needs of migratory bird populations and threatened and endangered species.

To meet its responsibilities, the U. S. Fish and Wildlife Service (Service) must provide a diversity of quality habitats for wildlife and protection for the species using these habitats. The Service also needs to ensure that all recreational activities occurring on the refuge are compatible with the purposes for which the refuge was established. To facilitate management and ensure these ends are achieved, the Service needs to develop plans which will maximize the cost/benefit ratio of management actions.

The needs of the public, primarily the local area communities, are for a place where traditional recreational activities such as hunting, fishing, and wildlife observation can be enjoyed. During CCP scoping, some members of the public expressed support for additional recreational, interpretive and educational activities on the refuge such as interpretive hiking trails, display exhibits, wildlife viewing areas, and outdoor classrooms for field ecology investigations.

This Environmental Assessment (EA) will accompany the Washita/Optima CCP. Both of these documents will be available for public review and comment prior to the issuance of a final CCP.

2.0 ALTERNATIVES INCLUDING PROPOSED ACTION

Alternative 1: Continuation of Ongoing Management (No Action)

The No Action alternative would continue current management practices. These are outlined in detail in the CCP in Chapters 7 and 8 under "Current Status" for each management objective.

Washita NWR

Current habitat management practices would continue. These would include farming approximately 2,000 acres of refuge lands to produce fodder for wildlife, managing on 84 acres of moist soil created wetlands, and conducting periodic prescribed fires to manage woody vegetation. Additional biological information on refuge resources would be obtained through incidental surveys, and appropriate information would not necessarily be available to evaluate current management decisions.

Under the No Action Plan, the current level of visitor services facilities would be provided. This includes a small visitor contact area in the refuge administrative office, the interpreted Centennial Trail, an informational kiosk and floodplain overlook adjacent to the refuge administrative office, a wildlife overlook at Owl Cove, 12 permanent pit blinds for goose hunting, three permanent blinds and additional temporary blinds for deer hunting, and access points with interpretive signage at various locations. Visitor service programs would continue to include providing classroom instruction as requested, guiding the youth deer hunt, and hosting visits to the refuge by scout and other groups as requested.

The refuge would continue to operate from its current administrative buildings. Refuge staff would continue to provide technical assistance to neighbors, including propane cannons to haze geese away from crops, on an as-requested, case-by-case basis. As currently managed, the refuge employs ten permanent full time (PFT) staff.

Optima NWR

Current habitat management practices, largely limited to farming approximately 240 acres of land to produce wildlife fodder, would continue. The refuge would continue to allow a deer archery hunt and upland game bird hunts as administered by the ODWC. Refuge staff would visit the station periodically to inspect facilities and maintain mowed fire breaks. The refuge would reach out to neighbors or other stakeholders only to a modest extent.

Alternative 2: Refuge Closure - Elimination of Public Use and Habitat Management

This alternative would close both refuges entirely to the public through closure of all access roads and posting the areas as closed to the public. Traditional recreational activities such as hunting, fishing, and wildlife observation would be discontinued. Management practices would not be implemented to improve or maintain habitats. All agricultural areas would be taken out of production and left fallow. Refuge habitats including retired croplands, current moist soil management areas, and other areas would evolve through natural succession of native annual and perennial species as well as exotic weed species. Management would consist of repairing flood

damage that affects adjacent landowners and road maintenance on those roads needed by the refuge staff to conduct minimal enforcement and ensure refuge closure. As the refuge lands are owned by the BOR, at Washita, and the Corps, at Optima, they are managed under a cooperative agreement between the Service, the BOR, and the Corps. This alternative would violate the terms of these agreements, and thus was not considered a viable option. It is evaluated here for its environmental impacts, as it could be considered a reasonable alternative and is instructive for comparison to other management regimes.

Alternative 3: Updated Management of Habitats and Public Use (Proposed Action)

Washita NWR

The proposed action is to adopt and implement the actions presented in the Washita/Optima NWR Complex CCP. The objectives and strategies detailed in the plan will provide for short and long-term conservation and enhancement of refuge resources and values.

Under the proposed action the refuge would implement habitat management actions aimed both at increasing refuge waterfowl use and conserving or restoring refuge ecological integrity. Efforts to increase waterfowl use of the refuge would include the following: surveying the entire refuge to identify new areas potentially suitable for moist soil management; reviewing current moist soil management practices to identify methods of improving the habitat value of moist soil areas (winter mowing to reduce woody vegetation, eliminating narrow areas that are too close to predator cover, etc); examining/implementing measures to foster wetland development in shallow areas of Foss Lake; and developing/implementing an integrated pest management plan to increase the efficiency of refuge farming for wildlife. Measures to improve the ecological integrity of the refuge would include: annually restoring 35 acres of degraded grasslands to a condition approximating native mixed grass prairie; working with neighbors to reduce sources of exotic and invasive species; developing/implementing a refuge-wide exotic and invasive species management program; continuing to regulate refuge deer population through annual hunts; and studying the effects of habitat fragmentation by Highway 33.

Under this alternative the refuge would conduct a baseline survey of refuge habitat and wildlife populations. This survey would complement the existing incomplete or anecdotal information about habitats and wildlife populations of the refuge. The data acquired would be used to inform ongoing management efforts and future CCP updates.

The refuge would also continue to consult with ODWC, universities and conservation organizations to identify cooperative habitat projects and research opportunities. In order to address an existing hazard to travelers, the refuge would investigate and implement methods of reducing deer-vehicle collisions on Highway 33.

Implementing the proposed alternative would increase the intensity and number of visitor services provided at the refuge. Under this alternative the refuge would seek to increase public awareness of the refuge as a visitor destination through outreach in Oklahoma tourism media and placement of signs on Interstate Highway 40 directing travelers to the refuge. The refuge would also increase its outreach to schools as a source of environmental education opportunities, offering both a developed curriculum and natural resources texts. Interpretive materials on the refuge

would also be enhanced, including a display of the region's history at the visitor contact station and additional interpretive signage of natural resources and management programs in the field. The refuge would develop a primitive hiking trail to facilitate wildlife watching. Current hunting programs would continue in their present configuration, with modifications to achieve management objectives. The refuge would continue to maintain 12 pit blinds for goose hunters and blinds for deer hunters.

Under this alternative refuge facilities would be enhanced. A new visitor contact station would be constructed, and the current administrative office would receive upgraded electrical and heating/cooling systems.

Implementation of the proposed alternative would also call for completion of a refuge cultural resources overview.

Implementing this alternative would require addition of three PFT positions during the 15-year implementation period.

Optima NWR

The proposed action is implementation of the actions described in the CCP for Optima NWR. Under this alternative the Service would continue to operate Optima NWR as a non-staffed satellite of Washita NWR. Programs to enhance wildlife habitat or restore refuge ecological integrity under this alternative would include the following: the farming for wildlife program would be retained, but would be evaluated for its efficacy in supporting native upland wildlife populations and modified per the results of the evaluation; an integrated pest management plan would be developed and implemented; 35 acres of grassland would be restored to a native mixed-grass prairie each year; tamarisk would be controlled in riparian areas and cottonwood saplings planted; and a full baseline survey of the refuge habitats would be completed.

The refuge would conduct a baseline survey of refuge habitat and wildlife populations. This survey would replace the very limited existing records of habitats and wildlife populations of the refuge. The data acquired would be used to inform ongoing management efforts and future CCP updates.

Under this alternative the refuge's outreach to neighboring communities and school systems would be enhanced. The current upland game bird and archery deer hunts would be retained.

The refuge would invite partners, including ODWC, Native American Tribes and universities to conduct wildlife and habitat research on the refuge.

Alternative 4: Full Public Use Development with Expanded Management Program

Washita NWR

This alternative would incorporate the changes to the habitat and wildlife management components of the program called for in the proposed alternative. However, this alternative would involve more concentrated efforts in developing the refuge's public use programs and facilities beyond the existing program.

Under this alternative, the entire refuge would be open to visitation throughout the year. Currently closed areas in the southern portion of the refuge would be opened. The refuge would develop extensive public use facilities including a wildlife observation and interpretive system with the following features: approximately five miles of hiking trails with parking and pull outs, a two mile interpretive canoe trail along the Washita River with parking, put-in and take-out areas at either end of the trail, and development of two motorized tour routes which would require additional road improvement on a total of seven miles of road.

Management efforts to develop the refuge's public use programs with this intensity would require a substantial increase in annual operational funding above that of Alternative 3 and the addition of two Park Rangers or Public Use Specialists within five years.

Although it is evaluated here for its environmental impacts, this alternative is not considered viable given existing budgetary constraints.

Optima NWR

Under this alternative, Optima NWR would focus on attracting visitors seeking outdoor recreation opportunities. The refuge would construct two wildlife viewing platforms, one on either side of US Highway 412, and an interpreted trail with all-weather signs interpreting refuge management programs and resident wildlife. The refuge would also develop paved parking areas adjacent to Highway 412 to accommodate visitors.

3.0 AFFECTED ENVIRONMENT

Washita NWR

Washita NWR was established in 1961 through the Fish and Wildlife Coordination Act as a management overlay on lands and waters acquired by the U.S. Bureau of Reclamation for the Foss Reservoir project. The refuge is located in Custer County, Oklahoma, at an elevation of approximately 1,700 feet above mean sea level (msl). Washita NWR is bisected by the Washita River just above its confluence with the north end of Foss Lake, and is accessed by State Highway 33 between the communities of Butler and Hammon, Oklahoma. It is part of a vital chain of refuges providing important habitat for birds migrating within the Central Flyway. The 8,075-acre refuge includes approximately 1,800 acres of lands flooded by Foss Lake, 2,000 acres of lands farmed to produce wildlife forage, and 3,200 acres of grasslands, with small wooded areas interspersed.

Refuge management focuses include: providing migratory and wintering habitat for waterfowl and Sandhill Cranes, preserving and restoring native mixed-grass prairie, providing habitat for other naturally occurring populations of wildlife, providing the public with opportunities wildlife dependent recreational activities. Washita NWR currently hosts approximately 44,000 recreational visitors per year. The majority of these visitors, approximately 26,000 per year come to the refuge to fish in Foss Lake and the Washita River. Other visitors engage in hunting, wildlife observation and photography or come to the refuge for group educational programs, such school and scout troop visits (for a more detailed description of Washita NWR and its resources, see Section 3 of the CCP)..

Optima NWR

Optima NWR is a satellite station headquartered at Washita NWR. Optima NWR is an overlay of the Corps Optima Reservoir Project, located in the southeast quarter of Texas County, near the center of the Oklahoma Panhandle. The refuge is approximately 14 miles east-southeast of Guymon, Oklahoma and just northwest of Hardesty, Oklahoma. Optima NWR is flat to rolling, consisting primarily of creek bottom, adjoining bluffs, and uplands, ranging from approximately 2,730 to 2,920 feet msl. The 4,333-acre refuge is located on the Coldwater Creek arm of the proposed Optima Reservoir, which never filled to design specifications due changes in regional ground water hydrology. The only semi-permanent standing water on the refuge is located in small wetlands in the lowest reach of Coldwater Creek. The largest single habitat type on the refuge is sagebrush, covering about 1,925 acres. Other areas of the refuge support riparian cottonwoods, mixed-grass prairie and lands farmed to produce forage for wildlife.

Although the refuge was anticipated to provide migratory and winter habitat for waterfowl and shorebirds, it provides little habitat suitable for such species due to the far less than anticipated impoundment levels in the Optima Reservoir. The refuge provides habitat for a variety of migratory songbirds and upland game species. Although recreational programs are very limited at this remote, unstaffed refuge, approximately 1,500 visitors come to Optima NWR each year, primarily for deer and turkey hunting (for a more detailed description of Optima NWR and its resources, see Section 5 of the CCP).

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Consequences Specific to Alternatives

Alternative 1: Continuation of Ongoing Management (No Action)

Impacts on Wildlife and Habitat

Implementing the No Action alternative would assume no significant changes in refuge operations. This alternative offers a strong level of protection for the natural resources of both refuges without a planned long-term management approach. By adopting the No Action alternative, the refuges would anticipate minimal negative impacts to the overall landscape. Invasion of weed species and exotics in areas adjacent to existing infestations would likely continue to occur. While the existing management would have no negative effects on biological resources, the lack of a strategic context of publicly accepted goals and objectives would make it difficult for refuge managers to implement resource priorities and justify annual budget requests. Indirectly, this could slow progress toward improving habitat and wildlife conditions.

Impacts on Threatened and Endangered Species

Little or no impacts on listed species are anticipated under current management practices. Existing programs (including hunting and fishing, agricultural use, and public outdoor recreation) have been reviewed and these uses were determined not to impact bald eagles, interior least terns, whooping cranes, or their habitats. Each of these species prefers edges adjacent to open water and wetlands. The refuge provides those habitat features within a sanctuary protected from development pressures of unrestrained public use. The Texas horned lizard is currently listed as an Oklahoma State Special Concern Category 2 Species and has been observed on the refuge. Under current refuge management strategies, the protection of threatened or endangered species is a primary concern; future conflicts regarding public use development would always be resolved in favor of the protected animal or plant.

Impacts on Public Use

The refuge would not increase opportunities for recreational activities such as hunting, fishing, and wildlife observation. The Washita River and Foss Reservoir would continue to provide public fishing and the primary refuge hunt areas will remain the same. Existing roads would have minor upgrades and maintenance. Public use facilities would remain essentially the same. New directional or interpretive signs would not be installed, facilities would not be upgraded, and the current headquarters facilities would not be improved or expanded to accommodate more visitors. Without facility upgrades, increased signs, and implementation of outreach programs, public use is expected to remain at approximately 44,000 visitors annually.

Impacts on Air and Water Quality

This alternative would have no impact on air quality. Automobile traffic through the refuge would not be at levels that could result in measurable air pollution.

Impacts on Aesthetic and Visual Resources

Limited change would occur from the current conditions with the exception of natural changes as a result of habitat restoration.

Impacts on Archaeological and Historical Resources

As the refuges have not conducted reviews of archaeological and historical resources, such resources are only identified when they are encountered during project implementation or uncovered by natural processes such as erosion. Under the No Action Alternative this would continue.

Impacts on Socioeconomic Resources

This alternative provides for continuation of existing hunting and fishing opportunities for citizens. Under this alternative, the refuge would not have any new programs or facilities to encourage more visitors to the area and would not generate additional revenue to the community.

Refuge croplands will continue to be farmed for the benefit of wildlife and to reduce cropland depredation by waterfowl on neighboring lands, either by cooperative farming or force account (staff) farming. Cooperative farming provides a modest level of additional local economic activity by providing addition cropland in the area. Restrictions on agricultural practices enforced to protect wildlife reduce crop yields, however, so the overall economic benefit is small.

Environmental Justice

Both refuges are located in rural settings surrounded by agricultural lands. Human populations proximate to the refuges are small and include low numbers of minority group members. Current management of the refuge should not produce disproportionate impact on low income or minority group populations.

Alternative 2: Refuge Closure - Elimination of Public Use and Habitat Management

Impacts on Wildlife and Habitat

Under this alternative, no management practices would be implemented to restore or enhance habitats, and refuge lands would evolve through natural succession. This alternative would stop progress toward improving habitat and wildlife conditions. With cessation of refuge farming programs, the farmed areas (approximately 2,000 acres) would quickly become infested with exotic and invasive species. This option would decrease the disturbance to feeding and resting wildlife, than that which occurs under the No Action Alternative. Despite reduced disturbance, however, this alternative would likely result in considerably less use of the refuge by waterfowl and sandhill cranes than the No Action Alternative, as habitat management programs focused on attracting these species would be discontinued.

Impacts on Threatened and Endangered Species

Little impact on listed species would be anticipated under the closure scenario. Habitats would not be improved or restored for the benefit of threatened and endangered wildlife species. However, these species may benefit from the complete elimination of the minimal disturbance from the public.

Impacts on Public Use

Closure of the refuges would effectively end all legitimate impact public use. This would result in the loss of approximately 44,000 annual visits to Washita NWR and approximately 1,500 annual visits at Optima, as compared to visitation under the No Action Alternative.

Impacts on Air and Water Quality

With refuge closure, traffic on the refuge would be reduced and air pollution would decrease very slightly, but probably not measurably in a regional context. With no management activities to improve grassland and riparian habitats, water quality would deteriorate through erosion and sedimentation. Cessation of force account and cooperative farming would reduce erosion and sedimentation from the currently farmed areas. Conservation measures in place in those programs limit erosion so the overall effect should be minimal.

Impacts on Aesthetic and Visual Resources

Limited change would occur from the current conditions with the exception of natural changes and only the refuge personnel would see it.

Impacts on Archaeological and Historical Resources

While archaeological and historical resources would remain unsurveyed under this alternative, the resources would be protected through closure of the refuges. A small benefit to archaeological and historical resources would thus occur, as compared to the No Action Alaternative.

Impacts on Socioeconomic Resources

Under this alternative, the refuge staff would be reduced and all public recreational opportunities on the refuge would be prohibited. This option would diminish the amount of money dispersed through the local economy. Cooperative farming would also be eliminated. The socioeconomic impacts of this alternative would be negative.

Environmental Justice

There would be no change in impacts to minority and low income populations associated with implementing this alternative.

Alternative 3: Updated Management of Habitats and Public Use (Proposed Action)

Impacts on Wildlife and Habitat

This alternative offers a planned long-term approach for the active management of the refuge wildlife populations, habitats, and public use opportunities. Implementation of this alternative would result in restoration of 35 acres of mixedgrass prairie on each refuge each year, creation of additional moist soil management areas, creation of vegetated wetlands in some shallows of Foss Lake and management of plant and insect pests on the refuge. These programs are aimed at restoring the ecological integrity of the refuge and meeting the objectives of the North American Waterfowl Management Plan. Implementing this alternative should benefit nesting grassland birds, foraging raptors, migrating and nesting waterfowl, geese, marsh birds, and neotropical migratory birds as compared to the No Action Alternative.

Impacts on Threatened and Endangered Species

Under this alternative, listed species would be provided added protection through increased surveillance and law enforcement. The Service will actively pursue opportunities to strengthen or improve partnerships and cooperative efforts with other agencies and individuals to improve habitat protection for endangered species. Also under this alternative, systematic biological surveys and inventories of the refuge resources would identify threatened and endangered species using the refuge. Management actions could then be implemented to protect them and enhance their habitats. Under this alternative threatened and endangered species would benefit, as compared to the No Action Alternative.

Impacts on Public Use

Under this alternative outreach to area schools and clubs, as well as development of curriculum materials would be increased for both refuges. Current hunts would continue to be permitted at both refuges. At Washita NWR improvements related to public use would include construction of an enlarged and enhanced visitor contact station, a primitive hiking trail, additional interpretive signage and refuge signs on Interstate Highway 40. Foss Reservoir would continue to provide public fishing and the primary refuge hunt areas will remain the same. With facility upgrades, increased signs, and implementation of outreach programs, public use is expected to increase somewhat, a 20 percent increase at Washita and a 0 to 5 percent increase at Optima is anticipated over the 15-year plan period.

Impacts on Air and Water Quality

This alternative involves improving visitor services and facilities which would increase the volume of traffic on the refuge. Air pollution and vehicle oil leaks could impact vegetation and water quality. However, automobile traffic through the refuge would not likely increase to such levels that would result in measurable air pollution.

With the restoration of native mixed-grass prairie habitat, riparian areas and wetlands, water quality should improve.

Impacts to water quality from the cooperative and force account farming on each refuge should be slightly reduced from those generated by the No Action Alternative, as the farming programs would be evaluated and modified to avoid farming unsuitable areas. This should reduce erosion and sedimentation.

Impacts on Aesthetic and Visual Resources

This alternative would not greatly change the appearance of the refuges.

Impacts on Archaeological and Historical Resources

Sites of prehistoric or historic significance would be identified and protected. Potential impacts on cultural and historic resources would be evaluated prior to construction of any parking areas, hiking trails, or other developed public use areas. Developments would be designed to avoid or minimize impact to cultural resources. This would result in an increase in protection of archaeological and historical resources above that which result from the No Action Alternative.

Impacts on Socioeconomic Resources

Refuge croplands will continue to be farmed for the benefit of wildlife, and Washita NWR will continue to provide assistance to neighboring farmers to reduce cropland depredation by waterfowl. Improved visitor services and facilities would encourage more public use opportunities and more visitors. The potential for increased tourism in the area would generate revenue for the local economy, particularly in the vicinity of Washita NWR, which is likely to generate more additional visitation than Optima NWR. The small towns of Butler and Hammon, proximate to Washita would be likely to benefit from increased sales at local stores and restaurants. Should efforts to reduce deer/vehicle collisions on State Highway 33 through Washita NWR be successful, a benefit to general public safety and convenience would result.

Environmental Justice

There would be no change in impacts to minority and low income populations associated with implementing this alternative.

Alternative 4: Full Public Use Development with Expanded Management Program

Impacts on Wildlife and Habitat Management

The habitat management provisions of this alternative are the same as those of the proposed action, and thus their results should be very similar. The expanded visitor services proposed, however, could result in disruption of wildlife using refuge habitats. This alternative would therefore result in fewer benefits to wildlife and habitats than the Alternative 3, although more than the No Action Alternative.

Impacts on Threatened and Endangered Species

Under this alternative, listed species would be provided added protection through increased surveillance and law enforcement. The Service would actively pursue opportunities to strengthen or improve partnerships and cooperative efforts with other agencies and individuals to improve habitat protection for endangered species. Expansion of fishing and hunting opportunities could affect threatened and endangered species recovery efforts if these opportunities occur in areas used by these protected animals. Although important habitats for threatened and endangered species would be protected from the impacts of increased and expanded public use programs, all developments would necessitate analysis with respect to the requirements of Section 7 of the Endangered Species Act. Compatibility determinations for hunting, fishing, and other public uses would be revised.

Impacts on Public Use

The refuge would increase opportunities for recreational activities such as hunting, fishing, and wildlife observation. Foss Reservoir would continue to provide public fishing and the primary refuge hunt areas would remain the same. Existing roads would have upgrades and maintenance, and new roads would be built. Public use facilities would be expanded and improved. New directional or interpretive signs would be installed, facilities would be upgraded, and the current headquarters facilities would be improved or expanded to accommodate more visitors. With facility upgrades, increased signs, and implementation of outreach programs, public use would be expected to increase to more than 50 percent in 15 years.

Impacts on Air and Water Quality

This alternative involves improving visitor services and facilities which would increase the volume of traffic on the refuge. Air pollution and vehicle oil leaks could impact vegetation and water quality. This alternative involves expanded use of fire as a management tool on the refuge which could cause temporary impacts to the refuge's air quality. Prescribed fires would be managed and monitored in accordance with Service policy. Overall this alternative would result in increased impacts to air quality as compared to the No Action Alternative.

Habitat restoration efforts, particularly in wetlands adjacent to the Washita River and riparian floodplain vegetation, would capture sediment from runoff, provide natural filtration, and reduce nonpoint source pollution into the River.

Impacts on Aesthetic and Visual Resources

Development of various educational, interpretive, or public use sites on the refuge would reduce the natural atmosphere that many visitors seek. Open vistas or other views might be degraded by the addition of a parking area or directional signs.

Impacts on Archaeological and Historical Resources

Impacts on cultural and historic resources would be evaluated at the time of construction of roads, parking areas, outdoor classrooms, hiking trails, and other developed public use areas. However, development most likely would have little or no impact.

Impacts on Socioeconomic Resources

Expansion and development of visitor services, outreach efforts, educational programs, and facilities would encourage more public use opportunities and more visitors to the area. The refuge would seek partnerships with the local community in developing the public use program and facilities. By promoting the refuge as an asset to local tourism, this partnership would benefit the Service if local support for the Service mission results. The surrounding communities, Butler and Hammon in the case of Washita NWR and Hardesty in the case of Optima, would likely benefit from visitor purchase at local store and restaurants.

Environmental Justice

There would be no change in impacts to minority and low income populations from those of the No Action Alternative associated with implementing this alternative.

4.2 Unavoidable Adverse Impacts

None of the alternatives would result in significant unavoidable direct impacts or indirect impacts on the environmental parameters evaluated in this environmental assessment. This includes Alternatives 2 and 4, as selection and implementation of either would be a conscious choice and therefore avoidable.

4.3 Irreversible and Irretrievable Commitments of Resources

Most management actions proposed in Alternative 3 and 4 would require a commitment of funds that would then be unavailable for use on any other Service project. Current staffing at the Washita and Optima NWR Complex is seven permanent full time (PFT) positions (see Section 5 of the CCP for more detail) Implementation of Alternative 3 calls for the addition of three more PFTs during the 15-year life of the plan, constructing a new visitor contact station and upgrading the existing administrative office space during the life of the plan. Alternative 4 would include all the Alternative 3 investments plus an additional two PFTs and development of overlooks, additional parking areas, and canoe launch sites. All of the projects and staff additions would require commitment of funds and once spent, these funds would be irretrievable. Development of new structures on the refuge would also permanently convert existing undeveloped land to imperviously covered developed sites. Non-renewable or non-recyclable resources committed to projects identified in the CCP, such as fuel for refuge vehicles would also represent irreversible and irretrievable commitments of resources. Implementing Alternative 2 would result in a reduction in staff to three PFTs, a reduction of four PFTs as compared with the No Action Alternative, and would also result in decreases in vehicle use, electrical power consumption and facility maintenance costs.

No irreversible or irretrievable loss of biological diversity, such as extirpations or extinctions should result from any of the proposed alternatives.

5.0 CUMULATIVE IMPACTS AND MITIGATION

5.1 Cumulative Impacts

Section 1508.7 of the Counsel on Environmental Quality's regulations implementing the National Environmental Policy Act (NEPA) defines cumulative impact as follows:

> Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Cumulative impacts are thus the combined results of actions taken by the Service on the refuges and actions of others within the vicinity of the refuges.

Additional outreach to the public, schools, non-profit organizations and tourism agencies, as proposed under Goals 7.4 and 8.4 of the CCP, Recreational Uses for Washita and Optima NWRs, could result in large increases in visitation to the refuges over time. This is particularly the case should the proposed Great Plains Trail of Oklahoma be developed and be successful in attracting increased numbers of birdwatchers to western Oklahoma. Additionally, if currently decreasing trends in the region's human population reverse, visitation to the refuges could also greatly increase. Increased visitation to the refuges, from any source, could stress wildlife species and populations on the refuge.

Continued agricultural uses of lands along the Washita River upstream of the refuge are likely to impact the quality of river water entering the north end of the refuge. The refuge will continue to monitor water quality at McClure Bridge to track this trend, but has little ability to affect this trend.

Hunting of migratory birds, as proposed under Alternative 3, is consistent with flyway plans for populations. The levels of hunting proposed will be regulated to prevent adverse consequences to flyway populations, when combined with hunt programs on other refuges, state and private lands. Similarly, the hunting of non-migratory species such as deer and game birds has been coordinated with state-wide plans of ODWC to avoid adverse consequences to larger populations throughout the state.

5.2 Mitigation Measures

Mitigation measures are necessary when environmental effects are anticipated to be at the threshold of significance. Nothing proposed in Alternative 3 should create any significant effects. Additionally, as the focus of the CCP is improvement of the environment at the two refuges, there is little mitigation for physical environmental impacts. Many objectives in the CCP are

programmatic in nature and local impacts are unknown. Specific mitigation measures for any project-specific impacts will thus be determined during detailed project planning and design.

6.0 Consultation and Coordination

The Washita and Optima NWR Complex Draft CCP and EA have been written with the participation of Service staff, refuge users, governmental partners, the local communities, organizations, and the general public. This chapter summarizes the consultation and coordination that has occurred to date in identifying the issues, alternatives, and the proposed alternative presented in the Draft CCP. It lists the various agencies, organizations, and individuals who were consulted in preparation of these documents.

The following meetings, contacts, and presentations were undertaken by the Service during the preparation of the Draft CCP and EA.

Preplanning activities for the Draft CCP began in 1999 when Research Management Consultants, Inc., a private consulting firm that initiated planning for the refuges consulted with refuge staff, mailed a refuge fact sheet to potentially interested parties and held a public open house at Washita NWR headquarters to answer questions and identify public concerns about the two refuges and their management.

The Service reinitiated planning activities on the refuges in 2005. In the Regional Office Planning Team Leader met with refuge staff for two days to identify management concerns. The refuges held a public meeting in Butler, Oklahoma in May to present information about the refuge and the management direction proposed, as well as providing members of the public to present their concerns and desires for the refuges. That meeting was attended by staff of the Oklahoma Department of Wildlife Conservation (ODWD), a representative of the Comanche Nation, staff of elected officials and faculty of Southwestern Oklahoma State University, as well as other members of the public. Also in May refuge staff and the Planning Team Leader participated in a comprehensive biological review of the refuges. The biological review team consisted of a group of biologists and other specialists from the refuge, the Service Regional Office, ODWC, and the U.S Bureau of Reclamation. This team made recommendations regarding the best ways to manage refuge natural resources and coordinate management of Washita and Optima NWRs with resource management throughout western Oklahoma.

During development of the Draft CCP, the Service has coordinated with the State of Oklahoma, the Bureau of Reclamation, the Army Corps of Engineers and other interested agencies. Advance copies of the Draft CCP were sent to ODWC and the Bureau of Reclamation.

The Draft CCP will be available for general review and comment for a 45-day period. The Service will host a public meeting during the review period present the Draft CCP and receive public and agency comments. The Service also welcomes written comments throughout the comment periods. The final CCP will address all substantive comments received.

APPENDIX A

WASHITA NWR

FISH LIST

WASHITA NWR
FISH LIST

Lepisosteidae	
Longnose Gar	*Lepisosteus osseus*
Clupeidae	
Gizzard Shad	*Dorosoma cepedianum*
Cyprinidae	
Carp (German or European)	*Cyprinus carpio**
Golden Shiner	*Notemigonus crysoleucas*
Shiner	*Notropis spp.*
Minnow	*Pimphales spp.*
Catostomidae	
River Carpsucker	*Carpiodes carpio*
Ictaluridae	
Channel Catfish	*Ictalurus punctatus*
Blue Catfish	*Ictalurus furcatus*
Black Bullhead	*Ictalurus melas*
Yellow Bullhead	*Ictalurus natalis*
Flathead Catfish	*Pylodictis olivaris*
Poeciliidae	
Mosquitofish	*Gambusia affinis*
Atherinidae	
Mississippi Silverside	*Menidia audens*
Inland Silverside	*Menidia beryllina*
Moronidae	
White Bass	*Morone chrysops*
Hybrid White/striped Bass	*Morone. chrysops* x *Morone. Saxatilis*+

Centrarchidae

Largemouth Bass	*Micropterus salmoides*
Green Sunfish	*Lepomis cyanellus*
Redear Sunfish	*Lepomis microlophus*
Bluegill	*Lepomis macrochirus*
Orangespotted Sunfish	*Lepomis humilis*
Longear Sunfish	*Lepomis megalotis*
White Crappie	*Pomoxis annularis*
Black Crappie	*Pomoxis nigromaculatus*

Percidae

Walleye	*Stizostedion vitreum**
Saugeye	*S. vitreum x S. canadense*+
Log perch	*Percina caprodes*

*non-native species
+hybrid game fish stocked by ODWC

APPENDIX B

WASHITA/OPTIMA NWR COMPLEX

AMPHIBIAN AND REPTILE LIST

WASHITA/OPTIMA NWR COMPLEX
AMPHIBIAN AND REPTILE LIST

This list is based on Conant's *Field Guide to the Eastern Reptiles and Amphibians*, Webb's *Reptiles of Oklahoma, Oklahoma Herpetology* by Carpenter and Krupa, and *A Field Guide to Western Reptiles and Amphibians* by Stebbins. The list includes species whose ranges encompass the Washita/Optima NWR Complex. Species that are at the edge of their range but could be possible at Washita/Optima are indicated by an asterisk (*).

AMPHIBIANS (14 sp.)

Salienta: Frogs and Toads (13 sp.)

Family Bufonidae: true toads

Great Plains Toad	*Bufo cognatus*
Red-spotted Toad	*Bufo punctatus*
Texas Toad	*Bufo speciosus*
Woodhouse's Toad	*Bufo woodhousei*

Family Hylidae: treefrogs and allies

Cricket Frog	*Acris crepitans*
Spotted Chorus Frog*	*Pseudacris clarkii*
Strecker's Chorus Frog*	*Pseudacris streckeri*

Family Microhylidae:

Great Plains Narrow-mouthed Toad	*Gastrophryne olivacea*

Family Pelobatidae: spadefoot toads

Plains Spadefoot	*Scaphiopus bombifrons*
Couch's Spadefoot (Washita)	*Scaphiopus couchii*
New Mexico Spadefoot (Optima)	*Scaphiopus multiplicatus*

Family Ranidae:

Plains Leopard Frog	*Rana blairi*
Bullfrog	*Rana catesbeiana*

Caudata: salamanders (1 sp.)

Family Ambystomatidae:

Tiger Salamander	*Ambystoma tigrinum*

REPTILES (46 sp.)

Testudines: Turtles (6 sp.)

Family Chelydridae: snapping turtles

Snapping Turtle	*Chelydra serpentina*

Family Emydidae:

Ornate Box Turtle	*Terrapene ornata*
Common Slider	*Trachemys scripta*

Family Kinosternidae: mud and musk turtles

Yellow Mud Turtle	*Kinosternon flavescens*

Family Trionychidae: softshell turtles

Smooth Softshell Turtle (Washita)	*Apalone mutica*
Spiny Softshell Turtle	*Apalone spinifera*

Squamata: Lizards and Snakes (40 sp.)

Family Anguidae: alligator and glass lizards

Slender Glass Lizard (Washita)	*Ophisaurus attenuatus*

Family Crotaphytidae:

Collared Lizard	*Crotaphytus collaris*

Family Phrynosomatidae:

Lesser Earless Lizard	*Holbrookia maculata*
Texas Horned Lizard	*Phrynosoma cornutum*
Fence Lizard	*Sceloporus undulatus*

Family Scincidae: skinks

Great Plains Skink	*Eumeces obsoletus*
Prairie Skink (Washita)	*Eumeces septentrionalis*
Ground Skink (Washita)	*Scincella lateralis*

Family Teiidae: whiptails

Six-lined Racerunner	*Cnemidophors sexlineatus*

Family Colubridae:

Glossy Snake	*Arizona elegans*
Racer	*Coluber constrictor*
Ring-necked Snake	*Diadophis punctatus*
Great Plains Rat Snake	*Elaphe guttata*
Black Rat Snake (Washita)	*Elaphe obsoleta*
Western Hog-nosed Snake	*Heterodon nasicus*
Eastern Hog-nosed Snake	*Heterodon platirhinos*
Night Snake*	*Hypsiglena torquata*
Prairie Kingsnake	*Lampropeltis calligaster*
Speckled Kingsnake	*Lampropeltis getulus*
Milk Snake	*Lampropeltis triangulum*
Coachwhip	*Masticophis flagellum*
Plain-bellied Water Snake	*Nerodia erythrogaster*
Diamondback Water Snake (Washita)	*Nerodia rhombifera*
Rough Green Snake*	*Opheodrys aestivus*
Bull Snake	*Pituophis melanoleucus*
Graham's Crayfish Snake (Washita)	*Regina grahami*
Texas Longnosed Snake	*Rhinocheilus lecontei tessellatus*
Ground Snake	*Sonora semiannulata*
Brown Snake (Washita)	*Storeria dekayi*
Plains Black-headed Snake	*Tantilla nigriceps*
Checkered Garter Snake	*Thamnophis marcianus*
Western Ribbon Snake	*Thamnophis proximus*
Western Plains Garter Snake	*Thamnophis radix*
Common Garter Snake* (Washita)	*Thamnophis sirtalis*
Lined Snake	*Tropidoclonion lineatum*

Family Leptotyphlopidae:

Blind Snake	*Leptotyphlops dulcis*

Family Viperidae: vipers

Copperhead*	*Agkistrodon contortrix*
Western Diamondback Rattlesnake	*Crotalus atrox*
Prairie Rattlesnake	*Crotalus viridis*
Western Massasauga	*Sistrurus catenatus*

APPENDIX C

WASHITA/OPTIMA NWR COMPLEX

BIRD LISTS

WASHITA NWR
TAXONOMIC BIRD LIST
(Order follows the *A.O.U. Check-list of North American Birds*, 7th ed. 1998)
[x] - Accidental

Loons

Red-throated Loon[x]	*Gavia stellata*
Pacific Loon[x]	*Gavia pacifica*
Common Loon	*Gavia immer*

Grebes

Pied-billed Grebe	*Podilymbus podiceps*
Horned Grebe	*Podiceps auritus*
Eared Grebe	*Podiceps nigricollis*
Western Grebe[x]	*Aechmophorus occidentalis*

Pelicans

American White Pelican	*Pelecanus erythrorhynchos*
Brown Pelican[x]	*Pelecanus occidentalis*

Cormorants

Double-crested Cormorant	*Phalacrocorax auritus*
Neotropic Cormorant[x]	*Phalacrocorax brasilianus*

Anhinga (Darters)

Anhinga[x]	*Anhinga anhinga*

Herons, Bitterns, and Egrets

American Bittern	*Botaurus lentiginosus*
Least Bittern	*Ixobrychus exilis*
Great Blue Heron	*Ardea herodias*
Great Egret	*Ardea alba*
Snowy Egret	*Egretta thula*
Little Blue Heron	*Egretta caerulea*
Tricolored Heron[x]	*Egretta tricolor*
Cattle Egret	*Bubulcus ibis*
Green Heron	*Butorides virescens*
Black-crowned Night Heron	*Nycticorax nycticorax*
Yellow-crowned Night-Heron	*Nyctanassa violaceus*

Ibises and Spoonbills

White Ibis[x]	*Eudocimus albus*
White-faced Ibis	*Plegadis chihi*

American Vultures

Turkey Vulture	*Cathartes aura*

Swans, Geese, and Ducks

Greater White-fronted Goose	*Anser albifrons*
Snow Goose	*Chen caerulescens*
Ross's Goose	*Chen rossii*
Canada Goose	*Branta canadensis*
Brant[x]	*Branta bernicla*
Trumpeter Swan[x]	*Cygnus buccinator*
Tundra Swan	*Cygnus columbianus*
Wood Duck	*Aix sponsa*
Gadwall	*Anas strepera*
American Wigeon	*Anas americana*
American Black Duck[x]	*Anas rubripes*
Mallard	*Anas platyrhynchos*
Blue-winged Teal	*Anas discors*
Cinnamon Teal	*Anas cyanoptera*
Northern Shoveler	*Anas clypeata*
Northern Pintail	*Anas acuta*
Green-winged Teal	*Anas crecca*
Canvasback	*Aythya valisineria*
Redhead	*Aythya americana*
Ring-necked Duck	*Aythya collaris*
Greater Scaup	*Aythya marila*
Lesser Scaup	*Aythya affinis*
Long-tailed Duck[x]	*Clangula hyemalis*
Bufflehead	*Bucephala albeola*
Common Goldeneye	*Bucephala clangula*
Hooded Merganser	*Lophodytes cucullatus*
Common Merganser	*Mergus merganser*
Red-breasted Merganser	*Mergus serrator*
Ruddy Duck	*Oxyura jamaicensis*

Kites, Eagles, and Hawks

Osprey	*Pandion haliaetus*
Mississippi Kite	*Ictinia mississippiensis*
Bald Eagle	*Haliaeetus leucocephalus*

Northern Harrier	*Circus cyaneus*
Sharp-shinned Hawk	*Accipiter striatus*
Cooper's Hawk	*Accipiter cooperii*
Northern Goshawk[x]	*Accipiter gentilis*
Harris's Hawk[x]	*Parabuteo unicinctus*
Red-shouldered Hawk[x]	*Buteo lineatus*
Swainson's Hawk	*Buteo swainsoni*
Red-tailed Hawk	*Buteo jamaicensis*
Ferruginous Hawk	*Buteo regalis*
Rough-legged Hawk	*Buteo lagopus*
Golden Eagle	*Aquila chrysaetos*

Falcons

American Kestrel	*Falco sparverius*
Merlin	*Falco columbarius*
Peregrine Falcon	*Falco peregrinus*
Prairie Falcon	*Falco mexicanus*

Pheasants Grouse and Turkeys

Ring-necked Pheasant	*Phasianus colchicus*
Lesser Prairie-Chicken	*Tympanuchus pallidicinctus*
Wild Turkey	*Meleagris gallopavo*

New World Quail

Northern Bobwhite	*Colinus virginianus*

Rails, Gallinules, and Coots

Sora	*Porzana carolina*
Common Moorhen	*Gallinula chloropus*
American Coot	*Fulica americana*

Cranes

Sandhill Crane	*Grus canadensis*
Whooping Crane	*Grus americana*

Plovers

Black-bellied Plover	*Pluvialis squatarola*
American Golden-Plover	*Pluvialis dominica*
Snowy Plover	*Charadrius alexandrinus*
Semipalmated Plover	*Charadrius semipalmatus*

Killdeer	*Charadrius vociferus*

Stilts and Avocets

Black-necked Stilt	*Himantopus mexicanus*
American Avocet	*Recurvirostra americana*

Sandpipers and Phalaropes

Greater Yellowlegs	*Tringa melanoleuca*
Lesser Yellowlegs	*Tringa flavipes*
Solitary Sandpiper	*Tringa solitaria*
Willet	*Catoptrophorus semipalmatus*
Spotted Sandpiper	*Actitis macularia*
Upland Sandpiper	*Bartramia longicauda*
Whimbrel	*Numenius phaeopus*
Long-billed Curlew	*Numenius americanus*
Hudsonian Godwit	*Limosa haemastica*
Marbled Godwit	*Limosa fedoa*
Ruddy Turnstone	*Arenaria interpres*
Sanderling	*Calidris alba*
Semipalmated Sandpiper	*Calidris pusilla*
Western Sandpiper	*Calidris mauri*
Least Sandpiper	*Calidris minutilla*
White-rumped Sandpiper	*Calidris fuscicollis*
Baird's Sandpiper	*Calidris bairdii*
Pectoral Sandpiper	*Calidris melanotos*
Stilt Sandpiper	*Calidris himantopus*
Long-billed Dowitcher	*Limnodromus scolopaceus*
Wilson's Snipe	*Gallinago gallinago*
Wilson's Phalarope	*Phalaropus tricolor*

Gulls and Terns

Franklin's Gull	*Larus pipixcan*
Bonaparte's Gull	*Larus philadelphia*
Ring-billed Gull	*Larus delawarensis*
Herring Gull	*Larus argentatus*
Lesser Black-backed Gull[x]	*Larus fuscus*
Common Tern	*Sterna hirundo*
Forster's Tern	*Sterna forsteri*
Interior Least Tern	*Sterna antillarum athalassos*
Black Tern	*Chlidonias niger*

Pigeons and Doves

Rock Dove	*Columba livia*
Eurasian Collared-Dove	*Steptopelia risoria*
White-winged Dove	*Zenaida asiatica*
Mourning Dove	*Zenaida macroura*
Inca Dove	*Columbina inca*

Cuckoos and Roadrunners

Yellow-billed Cuckoo	*Coccyzus americanus*
Greater Roadrunner	*Geococcyx californianus*

Barn Owls

Barn Owl	*Tyto alba*

Typical Owls

Eastern Screech-Owl	*Otus asio*
Great Horned Owl	*Bubo virginianus*
Snowy Owl[x]	*Bubo scandiacus*
Burrowing Owl	*Athene cunicularia*
Barred Owl	*Strix varia*
Long-eared Owl	*Asio otus*
Short-eared Owl	*Asio flammeus*

Goatsuckers

Common Nighthawk	*Chordeiles minor*
Common Poorwill	*Phalaenoptilus nuttallii*
Chuck-will's Widow	*Caprimulgus carolinensis*
Whip-poor-will	*Caprimulgus vociferus*

Swifts

Chimney Swift	*Chaetura pelagica*

Hummingbirds

Ruby-throated Hummingbird	*Archilochus colubris*
Black-chinned Hummingbird	*Archilochus alexandri*
Rufous Hummingbird	*Selasphorus rufus*

Kingfishers

Belted Kingfisher	*Ceryle alcyon*

Woodpeckers

Red-headed Woodpecker	*Melanerpes erythrocephalus*
Golden-fronted Woodpecker	*Melanerpes aurifrons*
Red-bellied Woodpecker	*Melanerpes carolinus*
Yellow-bellied Sapsucker	*Sphyrapicus varius*
Ladder-backed Woodpecker	*Picoides scalaris*
Downy Woodpecker	*Picoides pubescens*
Hairy Woodpecker	*Picoides villosus*
Northern Flicker	*Colaptes auratus*

Tyrant Flycatchers

Eastern Wood-peewee	*Contopus virens*
Least Flycather	*Empidonax minimus*
Eastern Phoebe	*Sayornis phoebe*
Say's Phoebe	*Sayornis saya*
Ash-throated Flycatcher	*Myiarchus cinerascens*
Great Crested Flycatcher	*Myiarchus crinitus*
Western Kingbird	*Tyrannus verticalis*
Eastern Kingbird	*Tyrannus tyrannus*
Scissor-tailed Flycatcher	*Tyrannus forficatus*

Shrikes

Loggerhead Shrike	*Lanius ludovicianus*

Vireos

White-eyed Vireo[x]	*Vireo griseus*
Bell's Vireo	*Vireo bellii*
Yellow-throated Vireo	*Vireo flavifrons*
Blue-headed Vireo	*Vireo solitarius*
Warbling Vireo	*Vireo gilvus*
Red-eyed Vireo	*Vireo olivacens*

Jays and Crows

Blue Jay	*Cyanocitta cristata*
Western Scrub Jay[x]	*Aphelocoma californica*
American Crow	*Corvus brachyrhynchos*

Larks

Horned Lark	*Eremophila alpestris*

Swallows

Purple Martin	*Progne subis*
Tree Swallow	*Tachycineta bicolor*
Bank Swallow	*Riparia riparia*
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
Cliff Swallow	*Petrochelidon pyrrhonota*
Barn Swallow	*Hirundo rustica*

Chickadees and Titmice

Carolina Chickadee	*Poecile carolinensis*
Tufted Titmouse	*Baeolophus bicolor*

Nuthatches

Red-breasted Nuthatch	*Sitta canadensis*
White-breasted Nuthatch	*Sitta carolinensis*

Creepers

Brown Creeper	*Certhia americana*

Wrens

Rock Wren	*Salpinctes obsoletus*
Carolina Wren	*Thryothorus ludovicianus*
Bewick's Wren	*Thryomanes bewickii*
House Wren	*Troglodytes aedon*
Winter Wren	*Troglodytes troglodytes*
Sedge Wren	*Cistothorus platensis*
Marsh Wren	*Cistothorus palustris*

Kinglets

Golden-crowned Kinglet	*Regulus satrapa*
Ruby-crowned Kinglet	*Regulus calendula*

Gnatcatchers

Blue-gray Gnatcatcher	*Polioptila caerulea*

Thrushes

Eastern Bluebird	*Sialia sialis*
Mountain Bluebird	*Sialia currucoides*
Townsend's Solitaire	*Myadestes townsendi*
Gray-cheeked Thrush[x]	*Catharus minimus*
Swainson's Thrush	*Catharus ustulatus*
Hermit Thrush	*Catharus guttatus*
American Robin	*Turdus migratorius*

Mockingbirds and Thrashers

Gray Catbird	*Dumetella carolinensis*
Northern Mockingbird	*Mimus polyglottos*
Sage Thrasher[x]	*Oreoscoptes montanus*
Brown Thrasher	*Toxostoma rufum*
Curve-billed Thrasher	*Toxostoma curvirostre*

Starlings

European Starling	*Sturnus vulgaris*

Pipits

American Pipit	*Anthus rubescens*
Sprague's Pipit	*Anthus spragueii*

Waxwings

Cedar Waxwing	*Bombycilla cedrorum*

Wood-warblers

Orange-crowned warbler	*Vermivora celata*
Nashville Warbler	*Vermivora ruficapilla*
Yellow Warbler	*Dendroica petechia*
Yellow-rumped Warbler	*Dendroica coronata*
Black-throated Green Warbler	*Dendroica virens*
Pine Warbler	*Dendroica pinus*
American Redstart	*Setophaga ruticilla*
Common Yellowthroat	*Geothlypis trichas*
Wilson's Warbler	*Wilsonia pusilla*
Yellow-breasted Chat	*Icteria virens*

Towhees, Sparrows, and Allies

Spotted Towhee	*Pipilo maculatus*
Cassin's Sparrow	*Aimophila cassinii*
Rufous-crowned Sparrow	*Aimophila ruficeps*
American Tree Sparrow	*Spizella arborea*
Chipping Sparrow	*Spizella passerina*
Clay-colored Sparrow	*Spizella pallida*
Field Sparrow	*Spizella pusilla*
Vesper Sparrow	*Pooecetes gramineus*
Lark Sparrow	*Chondestes grammacus*
Lark Bunting	*Calamospiza melanocorys*
Savannah Sparrow	*Passerculus sandwichensis*
Grasshopper Sparrow	*Ammodramus savannarum*
Le Conte's Sparrow	*Ammodramus leconteii*
Fox Sparrow	*Passerelia iliaca*
Song Sparrow	*Melospiza melodia*
Lincoln's Sparrow	*Melospiza lincolnii*
Swamp Sparrow	*Melospiza georgiana*
White-throated Sparrow	*Zonotrichia albicollis*
Harris's Sparrow	*Zonotrichia querula*
White-crowned Sparrow	*Zonotrichia leucophrys*
Dark-eyed Junco	*Junco hyemalis*
McCown's Longspur	*Calcarius mccownii*
Lapland Longspur	*Calcarius lapponicus*
Smith's Longspur	*Calcarius pictus*
Chestnut-collared Longspur	*Calcarius ornatus*

Cardinals and Allies

Northern Cardinal	*Cardinalis cardinalis*
Black-headed Grosbeak	*Pheucticus melanocephalus*
Blue Grosbeak	*Guiraca caerulea*
Lazuli Bunting	*Passerina amoena*
Indigo Bunting	*Passerina cyanea*
Painted Bunting	*Passerina ciris*
Dickcissel	*Spiza americana*

Blackbirds

Bobolink	*Dolichonyx oryzivorus*
Red-winged Blackbird	*Agelaius phoeniceus*
Eastern Meadowlark	*Sturnella magna*
Western Meadowlark	*Surnella neglecta*
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*
Rusty Blackbird	*Euphagus carolinus*

Brewer's Blackbird	*Euphagus cyanocephalus*
Common Grackle	*Quiscalus quiscula*
Great-tailed Grackle	*Quiscalus mexicanus*
Brown-headed Cowbird	*Molothrus ater*
Orchard Oriole	*Icterus spurius*
Baltimore Oriole	*Icterus galbula*
Bullock's Oriole	*Icterus bullockii*

Finches

Purple Finch[x]	*Carpodacus purpureus*
House Finch	*Carpodacus mexicanus*
Red Crossbill[x]	*Loxia curvirostra*
Pine Siskin	*Carduelis pinus*
American Goldfinch	*Carduelis tristis*
Evening Grosbeak	*Coccothraustes vespertinus*

Old World Sparrows

House Sparrow	*Passer domesticus*

OPTIMA NWR
TAXONOMIC BIRD LIST
(Order follows the *A.O.U. Check-list of North American Birds, 7th ed. 1999)*
Includes Optima Reservoir which is adjacent to the Refuge
[x] - Accidental

Loons

Common Loon	*Gavia immer*

Grebes

Pied-billed Grebe	*Podilymbus podiceps*
Horned Grebe	*Podiceps auritus*
Eared Grebe	*Podiceps nigricollis*
Western Grebe	*Aechmophorus occidentalis*

Pelicans

American White Pelican	*Pelecanus erythrorhynchos*

Cormorants

Double-crested Cormorant	*Phalacrocorax auritus*

Herons, Bitterns, and Egrets

American Bittern	*Botaurus lentiginosus*
Great Blue Heron	*Ardea herodias*
Great Egret	*Ardea alba*
Little Blue Heron	*Egretta caerulea*
Green Heron	*Butorides virescens*
Black-crowned Night Heron	*Nycticorax nycticorax*
Yellow-crowned Night Heron	*Nyctanassa violacea*

Ibis and Spoonbills

White-faced Ibis	*Plegadis chihi*

American Vultures

Turkey Vulture	*Cathartes aura*

Swans, Geese, and Ducks

Greater White-fronted Goose	*Anser albifrons*
Snow Goose	*Chen caerulescens*
Ross' Goose	*Chen rossii*
Canada Goose	*Branta canadensis*
Gadwall	*Anas strepera*
American Wigeon	*Anas americana*
Mallard	*Anas platyrhynchos*
Blue-winged Teal	*Anas discors*
Cinnamon Teal	*Anas cyanoptera*
Northern Shoveler	*Anas clypeata*
Northern Pintail	*Anas acuta*
Green-winged Teal	*Anas crecca*
Canvasback	*Aythya valisineria*
Redhead	*Aythya americana*
Ring-necked Duck	*Aythya collaris*
Lesser Scaup	*Aythya affinis*
Bufflehead	*Bucephala albeola*
Common Goldeneye	*Bucephala clangula*
Hooded Merganser	*Lophodytes cucullatus*
Common Merganser	*Mergus merganser*
Red-breasted Merganser	*Mergus serrator*
Ruddy Duck	*Oxyura jamaicensis*
Surf Scoter[x]	*Melanitta perspicillata*

Kites, Eagles, and Hawks

Osprey	*Pandion haliaetus*
Mississippi Kite	*Ictinia mississippiensis*
Bald Eagle[x]	*Haliaeetus leucocephalus*
Northern Harrier	*Circus cyaneus*
Sharp-shinned Hawk	*Accipiter striatus*
Cooper's Hawk	*Accipiter cooperii*
Swainson's Hawk[x]	*Buteo swainsoni*
Red-tailed Hawk	*Buteo jamaicensis*
Ferruginous Hawk[x]	*Buteo regalis*
Rough-legged Hawk	*Buteo lagopus*
Golden Eagle[x]	*Aquila chrysaetos*

Falcons

American Kestrel	*Falco sparverius*
Merlin	*Falco columbarius*
Prairie Falcon[x]	*Falco mexicanus*

Pheasants, Grouse, and Turkeys

Ring-necked Pheasant	*Phasianus colchicus*
Lesser Prairie-chicken	*Tympanuchus pallidicinctus*
Wild Turkey	*Meleagris gallopavo*

New World Quail

Scaled Quail	*Callipepla squamata*
Northern Bobwhite	*Colinus virginianus*

Rails, Gallinules, and Coots

King Rail	*Rallus elegans*
Virginia Rail	*Rallus limicola*
Sora	*Porzana carolina*
Common Moorhen	*Gallinula chloropus*
American Coot	*Fulica americana*

Cranes

Sandhill Crane	*Grus canadensis*

Plovers

Black-bellied Plover	*Pluvialis squatarola*
American Golden-Plover	*Pluvialis dominica*
Snowy Plover	*Charadrius alexandrinus*
Semipalmated Plover	*Charadrius semipalmatus*
Killdeer	*Charadrius vociferus*
Mountain Plover	*Charadrius montanus*

Stilts and Avocets

Black-necked Stilt	*Himantopus mexicanus*
American Avocet	*Recurvirostra americana*

Sandpipers and Phalaropes

Greater Yellowlegs	*Tringa melanoleuca*
Lesser Yellowlegs	*Tringa flavipes*
Solitary Sandpiper	*Tringa solitaria*
Willet	*Catoptrophorus semipalmatus*
Spotted Sandpiper	*Actitis macularia*
Upland Sandpiper	*Bartramia longicauda*
Whimbrel	*Numenius phaeopus*

Long-billed Curlew	*Numenius americanus*
Sanderling	*Calidris alba*
Semipalmated Sandpiper	*Calidris pusilla*
Western Sandpiper	*Calidris mauri*
Least Sandpiper	*Calidris minutilla*
White-rumped Sandpiper	*Calidris fuscicollis*
Baird's Sandpiper	*Calidris bairdii*
Pectoral Sandpiper	*Calidris melanotos*
Stilt Sandpiper	*Calidris himantopus*
Long-billed Dowitcher	*Limnodromus scolopaceus*
Common Snipe	*Gallinago gallinago*
Wilson's Phalarope	*Phalaropus tricolor*
Red-necked Phalarope	*Phalaropus lobatus*

Gulls and Terns

Franklin's Gull	*Larus pipixcan*
Ring-billed Gull	*Larus delawarensis*
Forster's Tern	*Sterna forsteri*
Interior Least Tern[x]	*Sterna antillarum athalassos*
Black Tern	*Chlidonias niger*

Pigeons and Doves

Rock Dove	*Columba livia*
Mourning Dove	*Zenaida macroura*

Cuckoos and Roadrunners

Black-billed Cuckoo	*Coccyzus erythropthalmus*
Yellow-billed Cuckoo	*Coccyzus americanus*
Greater Roadrunner	*Geococcyx californianus*

Barn Owls

Barn Owl[x]	*Tyto alba*

Owls

Western Screech-Owl	*Otis kennicottii*
Great Horned Owl	*Bubo virginianus*
Burrowing Owl[x]	*Athene cunicularia*
Long-eared Owl	*Asio otus*
Short-eared Owl	*Asio flammeus*

Goatsuckers

Common Nighthawk	*Chordeiles minor*
Common Poorwill	*Phalaenoptilus nuttallii*

Swifts

Chimney Swift	*Chaetura pelagica*

Hummingbirds

Ruby-throated Hummingbird	*Archilochus colubris*
Black-chinned Hummingbird	*Archilochus alexandri*
Rufous Hummingbird	*Selasphorus rufus*

Kingfishers

Belted Kingfisher	*Ceryle alcyon*

Woodpeckers

Red-headed Woodpecker	*Melanerpes erythrocephalus*
Red-bellied Woodpecker	*Melanerpes carolinus*
Ladder-backed Woodpecker	*Picoides scalaris*
Downy Woodpecker	*Picoides pubescens*
Hairy Woodpecker	*Picoides villosus*
Northern Flicker	*Colaptes auratus*

Tyrant Flycatchers

Olive-sided Flycatcher	*Contopus cooperi*
Western Wood-Pewee	*Contopus sordidulus*
Willow Flycatcher	*Empidonax traillii*
Least Flycatcher	*Empidonax minimus*
Hammond's Flycatcher	*Empidonax hammondii*
Dusky Flycatcher	*Empidonax oberholseri*
Cordilleran Flycatcher	*Empidonax occidentalis*
Eastern Phoebe	*Sayornis phoebe*
Say's Phoebe	*Sayornis saya*
Ash-throated Flycatcher	*Myiarchus cinerascens*
Great Crested Flycatcher	*Myiarchus crinitus*
Cassin's Kingbird	*Tyrannus vociferans*
Western Kingbird	*Tyrannus verticalis*
Eastern Kingbird	*Tyrannus tyrannus*
Scissor-tailed Flycatcher	*Tyrannus forficatus*

Shrikes

Loggerhead Shrike[x]	*Lanius ludovicianus*
Northern Shrike	*Lanius excubitor*

Vireos

Bell's Vireo[x]	*Vireo bellii*
Blue-headed Vireo	*Vireo solitarius*
Warbling Vireo	*Vireo gilvus*
Red-eyed Vireo	*Vireo olivaceus*

Jays, Magpies, Crows, and Ravens

Blue Jay	*Cyanocitta cristata*
Black-billed Magpie	*Pica pica*
American Crow	*Corvus brachyrhynchos*
Chihuahuan Raven	*Corvus cryptoleucus*

Larks

Horned Lark	*Eremophila alpestris*

Swallows

Purple Martin	*Progne subis*
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
Bank Swallow	*Riparia riparia*
Cliff Swallow	*Petrochelidon pyrrhonota*
Barn Swallow	*Hirundo rustica*

Chickadees and Titmice

Carolina Chickadee	*Poecile carolinensis*

Nuthatches

Red-breasted Nuthatch	*Sitta canadensis*
White-breasted Nuthatch	*Sitta carolinensis*

Creepers

Brown Creeper	*Certhia americana*

Wrens

Rock Wren	*Salpinctes obsoletus*
Canyon Wren	*Catherpes mexicanus*
Bewick's Wren	*Thryomanes bewickii*
House Wren	*Troglodytes aedon*
Sedge Wren	*Cistothorus platensis*
Marsh Wren	*Cistothorus palustris*

Kinglets

Golden-crowned Kinglet	*Regulus satrapa*
Ruby-crowned Kinglet	*Regulus calendula*

Gnatcatchers

Blue-gray Gnatcatcher	*Polioptila caerulea*

Thrushes and Bluebirds

Eastern Bluebird	*Sialia sialis*
Mountain Bluebird	*Sialia currucoides*
Townsend's Solitaire	*Myadestes townsendi*
Gray-cheeked Thrush	*Catharus minimus*
Swainson's Thrush	*Catharus ustulatus*
Hermit Thrush	*Catharus guttatus*
American Robin	*Turdus migratorius*

Mockingbirds and Thrashers

Gray Catbird	*Dumetella carolinensis*
Northern Mockingbird	*Mimus polyglottos*
Brown Thrasher	*Toxostoma rufum*
Curve-billed Thrasher	*Toxostoma curvirostre*

Starlings

European Starling	*Sturnus vulgaris*

Pipits

Sprague's Pipit	*Anthus spragueii*

Waxwings

Bohemian Waxwing	*Bombycilla garrulus*
Cedar Waxwing	*Bombycilla cedrorum*

Wood-warblers

Tennessee Warbler	*Vermivora peregrina*
Orange-crowned Warbler	*Vermivora celata*
Yellow Warbler	*Dendroica petechia*
Chestnut-sided Warbler	*Dendroica pensylvanica*
Black-throated Blue Warbler	*Dendroica caerulescens*
Black-throated Green Warbler	*Dendroica virens*
Black-and-white Warbler	*Mniotilta varia*
American Redstart	*Setophaga ruticilla*
Ovenbird	*Seiurus aurocapillus*
Northern Waterthrush	*Seiurus noveboracensis*
Mourning Warbler	*Oporornis philadelphia*
MacGillivray's Warbler	*Oporornis tolmiei*
Common Yellowthroat	*Geothlypis trichas*
Hooded Warbler	*Wilsonia citrina*
Yellow-breasted Chat	*Icteria virens*

Towhees, Sparrows, and Allies

Green-tailed Towhee	*Pipilo chlorurus*
Spotted Towhee	*Pipilo maculatus*
Cassin's Sparrow	*Aimophila cassinii*
Rufous-crowned Sparrow	*Aimophila ruficeps*
American Tree Sparrow	*Spizella arborea*
Clay-colored Sparrow	*Spizella pallida*
Brewer's Sparrow	*Spizella breweri*
Field Sparrow	*Spizella pusilla*
Vesper Sparrow	*Pooecetes gramineus*
Lark Sparrow	*Chondestes grammacus*
Savannah Sparrow	*Passerculus sandwichensis*
Grasshopper Sparrow	*Ammodramus savannarum*
Song Sparrow	*Melospiza melodia*
Lincoln's Sparrow	*Melospiza lincolnii*
White-throated Sparrow	*Zonotrichia albicollis*
Harris' Sparrow	*Zonotrichia querula*
White-crowned Sparrow	*Zonotrichia leucophrys*
Dark-eyed Junco	*Junco hyemalis*
McCown's Longspur	*Calcarius mccownii*
Lapland Longspur	*Calcarius lapponicus*
Chestnut-collared Longspur	*Calcarius ornatus*

Cardinals and Allies

Northern Cardinal	*Cardinalis cardinalis*
Rose-breasted Grosbeak	*Pheucticus ludovicianus*
Black-headed Grosbeak	*Pheucticus melanocephalus*
Blue Grosbeak	*Guiraca caerulea*
Lazuli Bunting	*Passerina amoena*
Dickcissel	*Spiza americana*

Blackbirds

Bobolink	*Dolichonyx oryzivorus*
Red-winged Blackbird	*Agelaius phoeniceus*
Eastern Meadowlark	*Sturnella magna*
Western Meadowlark	*Sturnella neglecta*
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*
Rusty Blackbird	*Euphagus carolinus*
Brewer's Blackbird	*Euphagus cyanocephalus*
Common Grackle	*Quiscalus quiscula*
Great-tailed Grackle	*Quiscalus mexicanus*
Brown-headed Cowbird	*Molothrus ater*
Orchard Oriole	*Icterus spurius*
Baltimore Oriole	I*cterus galbula*

Finches

House Finch	*Carpodacus mexicanus*
Red Crossbill	*Loxia curvirostra*
White-winged Crossbill	*Loxia leucoptera*
Pine Siskin	*Carduelis pinus*
Lesser Goldfinch	*Carduelis psaltria*
American Goldfinch	*Carduelis tristis*
Evening Grosbeak	*Coccothraustes vespertinus*

Old World Sparrows

House Sparrow	*Passer domesticus*

APPENDIX D

WASHITA/OPTIMA NWR COMPLEX

MAMMAL LIST

WASHITA/OPTIMA NWR COMPLEX
MAMMAL LIST
([x] = accidental)

DIDELPHIMORPHA

Virginia Opossum	*Didelphis virginiana*

INSECTIVORA

Gray Shrew	*Notiosorex crawfordii*
Least Shrew	*Cryptotis parva*
Eastern Mole	*Scalopus aquaticus*

CHIROPTERA

Mexican Free-tailed Bat[x] (Washita)	*Tadarida brasiliensis*
Cave Myotis	*Myotis velifer*
Silver-haired Bat	*Lasionycteris noctivagans*
Western Pipistrel	*Pipistrellus hesperius*
Big Brown Bat	*Eptesicus fuscus*
Red Bat	*Lasiurus borealis*
Hoary Bat	*Lasiurus cinereus*

XENARTHRA

Nine-banded Armadillo	*Dasypus novemcinctus*

LAGOMORPHA

Desert Cottontail	*Sylvilagus audubonii*
Eastern Cottontail	*Sylvilagus floridanus*
Black-tailed Jackrabbit	*Lepus californicus*

RODENTIA

Black-tailed Prairie Dog[x]	*Cynomys ludovicianus*
Thirteen-lined Ground Squirrel	*Spermophilus tridecemlineatus*
Spotted Ground Squirrel	*Citellus spilosoma*
Eastern Fox Squirrel (Washita)	*Sciurus niger*
Plains Pocket Gopher	*Geomys busarius*
Plains Pocket Mouse	*Perognathus flavescens*
Silky Pocket Mouse	*Perognathus flavus*
Hispid Pocket Mouse	*Perognathus hispidus*
Hispid Cotton Rat	*Sigmodon hispidus*
Ord's Kangaroo Rat	*Dipodomys ordi*

Northern Grasshopper Mouse	*Onychomys leucogaster*
Eastern Woodrat	*Neotoma floridana*
Southern Plains Woodrat	*Neotoma micropus*
Fulvous Harvest Mouse	*Reithrodontomys fulvescens*
Plains Harvest Mouse	*Reithrodontomys montanus*
Eastern Harvest Mouse[x]	*Reithrodontomys humulis*
Deer Mouse	*Peromyscus maniculatus*
White-footed Mouse	*Peromyscus leucopus*
Muskrat	*Ondatra zibethica*
Norway Rat	*Rattus norvegicus*
House Mouse	*Mus musculus*
Porcupine	*Erethizon dorsatum*
American Beaver	*Castor canadensis*

CARNIVORA

Raccoon	*Procyon lotor*
Coyote	*Canis latrans*
Striped Skunk	*Mephitis mephitis*
Spotted Skunk	*Spilogale putoris*
Bobcat	*Lynx rufus*
Gray Fox	*Urocyon cinereoargenteus*
Ringtail[x]	*Bassariscus astutus*
Badger	*Taxidea taxus*
Long-tailed Weasel[x] (Optima)	*Mustela frenata*
Mink	*Mustela vision*
Swift Fox[x] (Optima)	*Vulpes velox*

ARTIODACTYLA

White-tailed Deer	*Odocoileus virginianus*
Mule Deer	*Odocoileus hemionus*
Wapiti[x]	*Cervus elaphus*
Moose[x]	*Alces alces*

APPENDIX E

WASHITA/OPTIMA NWR COMPLEX

THREATENED AND ENDANGERED SPECIES LIST

WASHITA/OPTIMA NWR COMPLEX
THREATENED AND ENDANGERED SPECIES LIST

Peregrine Falcon	*Falco peregrinus*	T-PD
Bald Eagle	*Haliaeetus leucocephalus*	T-PD
Least Tern	*Stena antillarum*	E
Whooping Crane	*Grus Americana*	E
Piping Plover (Texas County)[1]	*Charadrius melodus*	T
Texas Horned Lizard	*Phrynosoma cornutum*	SS2
Swift Fox	*Vulpes velox*	SS2

[1] not found on the Refuge, but occurs in the area.

Index

E	=	Endangered
PD	=	Proposed for Delisting
T	=	Threatened
SS2	=	State Species of Special Concern (Category 2) The SS2 designation is defined as "a native species identified by technical experts as possibly threatened, or vulnerable to extirpation but for which little if any evidence exists to document the population level, range or other factors pertinent to its status".

APPENDIX F

WASHITA/OPTIMA NWR COMPLEX

REFUGE OPERATING NEEDS SYSTEM (RONS)

Station	Project Title	Project No.	Ranks Region	Ranks Station	Budget Category	C N F $ C R D	Costs $ (000) Yr1	Costs $ (000) Recurring	FTE
Washita NWR									
Tier1									
Washita NWR	Control Invasive Exotic Weeds	99002	86	1	Habitat	☐☒☐☐	$27	$11	
Washita NWR	Improve Visitor Services and Recreational Opportunities	97011	284	2	People	☐☒☐☐	$88	$11	
Washita NWR	Improve Soil Conservation	97008	304	4	Habitat	☐☒☐☐	$41	$5	
Washita NWR	Monitor Water Quality (Cooperative Project)	97007	374	5	Habitat	☐☒☐☐	$17	$7	
Tier2									
Washita NWR	Enhance cropland management program	97002	518	2	Habitat	☐☐☐☐	$43	$25	
Washita NWR	Construct fire equipment storage building	97004	654	11	Habitat	☐☐☐☐	$80	$10	
Washita NWR	Expand maintenance capabilities	97001	753	8	Habitat	☐☐☐☐	$270	$74	1.00
Washita NWR	Expand Public Education and Recreation Programs	01002	754	7	People	☐☐☐☐	$65	$63	1.00
Washita NWR	Conduct Cultural Resources Survey	01001	755	10	People	☐☐☐☐	$50	$2	0.00
Washita NWR	Expand Education Outreach Program	01003	756	6	People	☐☐☐☐	$35	$1	0.00
Washita NWR	Develop Public Use Step Down Plan	01004	757	1	People	☐☐☐☐	$76	$0	0.00
Washita NWR	Construct fishing platform for mobility impaired fishermen	02002	758	5	People	☐☐☐☐	$10	$1	0.00

	#Projects	Total Mgr	Total Res Spec	Total Bio's	Total LE	Total Ed/Rec	Total Cler/Admin	Total Maint			
Station Totals	13	0.00	0.00	0.00	1.00	1.00	0.00	1.00	$802	$210	2.00

☐:

21660

Proj #: 99002 **Washita NWR** **OK**

New Station:

HQ: Washita NWR **Type: NWR** **CD: OK06**

Main ecosystem: Arkansas/Red Rivers

GeoArea: Oklahoma

Additional Stations covered:

ACTIVITY: *HABITAT MANAGEMENT* *Habitat*

3.g. Native Pest Plant Control

MEASURES:

2,500	acres will be treated
3,000	acres infested by target species
600	acres will be treated chemically
2,400	acres will be treated mechanically or physically
0	acres will be treated biologically
	acres will be surveyed or monitored for native pest plant species

TITLE: Control Invasive Exotic Weeds

DESCRIPTION:

Control invasive exotic weeds impacting refuge lands important to wintering waterfowl, migratory birds, and other wildlife Mustard and thistle species, pig weed, cheat grass, and Johnson grass are causing decreased productivity of 2,100 acres of cropland. Red horned poppy, a relatively new invader needs to be controlled before it becomes widespread. Johnson grass is a major pest throughout the entire refuge and surrounding area and has virtually taken over the ditches and streamside corridors, deteriorating habitat for resident and migratory wildlife.

LINKS:

RONS		MMS	
Project #	**Orgcode**	**Project #**	**Orgcode**

Recurring Staff Needs (FTEs)	**Number (1/10s)**	**Grade**	**FTE Cost**
FTEs: Managers			$0
Resource Specialists			$0
Education/Recreation Staff			$0
Biologists/Biotechnicians			$0

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Law Enforcement (Premium Pay).....	.....	.....	.....$0
Clerical/Administrative.....	.....	.....	.....$0
Maintenance/Equipment Operation.....	.....	.....	.....$0
TOTAL FTEs Needed.....	.....		.....$0

Funds Needed ($1000s):	One-Time	Recurring Base	First Year Need
Operations: Personnel Cost.....	.....	.....	
Equipment Cost.....	.....$10		
Facility Cost.....	.....		
Services/Supplies.....	.....$10	.....$5	
Miscellaneous Costs.....	.....$7	.....$6	
TOTAL Operations Cost..	.....$27	.....$11	.....$38

PROJECT NOTES:

CLARIFY STAFF: Minimum staffing category identification required for new /expanded stations.

CLARIFY COST: Justify deviations to standardized costs per FTE associated with minimum staff.

OUTCOMES: **Select up to 3 Outcomes: (Click box for list)**

Healthy Ecosystems

☐ Station CCP approved 10/97+	☒ Station Goal/Objective	☐ FWS Recovery Plan	☐ Other Major P
☐ Station CCP/equivalent pre-10/97	☐ Station Step-down Mgmt Plan	☒ FWS Ecosystem Goal/Plan	☐ Legal Mandate

PLANNING LINK:

Exotic and invasive weeds affect the productivity of crops. Any decrease in crop productivity directly affects the amount of food available for the wildlife that utilize the refuge. Goose and deer populations are at or above objective levels and require maximum food production of the crop lands.

RANK - STATION: .....1..... **REGIONAL:** .....86.....

NATIONAL: ..... **GEOGRAPHIC AREA:** .....12.....

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21660

Proj #: 97011 **Washita NWR** **OK**

New Station:

HQ: Washita NWR **Type: NWR** **CD: OK06**

Main ecosystem: Arkansas/Red Rivers

GeoArea: Oklahoma

Additional Stations covered:

ACTIVITY: *PUBLIC EDUCATION & RECREATION* *People*

7.a. Provide Visitor Services

MEASURES:

1,000 new visitors will be served
7,500 existing visitors will be better served
100 % will support the top 6 priority public uses
0 % will support non-priority public uses

TITLE: Improve Visitor Services and Recreational Opportunities

DESCRIPTION:

Improve outreach with refuge visitors, hunters, anglers, teachers, and community leaders and to implement the station's outreach plan. The hiking and fishing access trail to Turkey Flats would be enhanced by adding an additional loop and interpretive signs in order to improve public recreation activities at the refuge. Fishing is a popular activity at Washita NWR; this project would include a handicapped accessible parking area, fishing pier, and boat ramp at Lakeview recreation area. Based on the latest Fish and Wildlife Service data available, the additional visitors attracted to this area are expected to contribute $11,152 annually to the local economy.

LINKS:

RONS		MMS	
Project #	**Orgcode**	**Project #**	**Orgcode**

Recurring Staff Needs (FTEs)	**Number (1/10s)**	**Grade**	**FTE Cost**
FTEs: Managers			$0
Resource Specialists			$0
Education/Recreation Staff			$0
Biologists/Biotechnicians			$0

Printed April 14, 2006

Law Enforcement (Premium Pay).....	.....	.....	.....$0
Clerical/Administrative.....	.....	.....	.....$0
Maintenance/Equipment Operation.....	.....	.....	.....$0
TOTAL FTEs Needed.....	.....		.....$0

Funds Needed ($1000s):	One-Time	Recurring Base	First Year Need
Operations: Personnel Cost.....	.....	.....	
Equipment Cost.....	.....		
Facility Cost.....	.....$70		
Services/Supplies.....	.....$10	.....	
Miscellaneous Costs.....	.....$8	.....$11	
TOTAL Operations Cost..	.....$88	.....$11	.....$99

PROJECT NOTES:

CLARIFY STAFF: Minimum staffing category identification required for new /expanded stations.

CLARIFY COST: Justify deviations to standardized costs per FTE associated with minimum staff.

OUTCOMES: **Select up to 3 Outcomes: (Click box for list)**

Public Recreation
Public Education

☐ Station CCP approved 10/97+	☒ Station Goal/Objective	☐ FWS Recovery Plan	☐ Other Major P
☐ Station CCP/equivalent pre-10/97	☐ Station Step-down Mgmt Plan	☒ FWS Ecosystem Goal/Plan	☒ Legal Mandate

PLANNING LINK:

The station currently has only one designated hiking trail for wildlife observation and other recreational activities. These additions would help accomplish the goal of increasing visitor use.

RANK - STATION: .....2..... **REGIONAL:** ...284...

NATIONAL: ..... **GEOGRAPHIC AREA:** .....65.....

Printed April 14, 2006

☐:

21660

Proj #: 97008 **Washita NWR** **OK**

New Station:

HQ: Washita NWR **Type: NWR** **CD: OK06**

Main ecosystem: Arkansas/Red Rivers

GeoArea: Oklahoma

Additional Stations covered:

ACTIVITY: *HABITAT MANAGEMENT* *Habitat*

3.d. Farming

MEASURES:

0 new acres will be farmed

0 % will be cooperatively farmed

500 existing acres will be farmed more effectively

TITLE: Improve Soil Conservation

DESCRIPTION:

Improve soil conservation on refuge agricultural fields used to provide food for over 100,000 wintering waterfowl. Soil erosion is occurring on several crop land areas resulting in crop damage, loss of top soil, reduced productivity, and formation of gullies. Terracing, grassed waterways and drop structures will be constructed to reduce soil losses and prevent siltation of water bodies. Enhanced cropland management practices will also aid in the control of invasive species on the refuge.

LINKS:

RONS		MMS	
Project #	**Orgcode**	**Project #**	**Orgcode**

Recurring Staff Needs (FTEs)	**Number (1/10s)**	**Grade**	**FTE Cost**
FTEs: Managers			$0
Resource Specialists			$0
Education/Recreation Staff			$0
Biologists/Biotechnicians			$0

Printed April 14, 2006

Law Enforcement (Premium Pay).....	.....	.....	.....$0
Clerical/Administrative.....	.....	.....	.....$0
Maintenance/Equipment Operation.....	.....	.....	.....$0
TOTAL FTEs Needed.....	.....		.....$0

Funds Needed ($1000s):	One-Time	Recurring Base	First Year Need
Operations: Personnel Cost.....	.....	.....	
Equipment Cost.....	.....		
Facility Cost.....	.....$15		
Services/Supplies.....	.....$20	.....	
Miscellaneous Costs.....	.....$6	.....$5	
TOTAL Operations Cost..	.....$41	.....$5	.....$46

PROJECT NOTES:

CLARIFY STAFF: Minimum staffing category identification required for new /expanded stations.

CLARIFY COST: Justify deviations to standardized costs per FTE associated with minimum staff.

OUTCOMES: **Select up to 3 Outcomes: (Click box for list)**

Waterfowl
Healthy Ecosystems

☐ Station CCP approved 10/97+	☒ Station Goal/Objective	☐ FWS Recovery Plan	☐ Other Major P
☐ Station CCP/equivalent pre-10/97	☐ Station Step-down Mgmt Plan	☐ FWS Ecosystem Goal/Plan	☐ Legal Mandate

PLANNING LINK:

This project would support refuge goals by protecting wildlife habitat (in the farm fields and river watershed) from soil erosion.

RANK - STATION: .....4..... **REGIONAL:** ...304...

NATIONAL: ..... **GEOGRAPHIC AREA:** ....70....

Printed April 14, 2006

☐:

21660

Proj #: 97007 **Washita NWR** **OK**

New Station:

HQ: Washita NWR **Type: NWR** **CD: OK06**

Main ecosystem: Arkansas/Red Rivers

GeoArea: Oklahoma

Additional Stations covered:

ACTIVITY: *RESOURCE PROTECTION* *Habitat*

6.c. Contaminant Investigation

MEASURES:

1 contaminant investigations will be conducted
1 water quality studies will be conducted
0 air quality studies will be conducted

TITLE: Monitor Water Quality (Cooperative Project)

DESCRIPTION:

Currently there is no contaminant or water quality monitoring program at the refuge. Development and operation of a contaminant monitoring program, with primary emphasis on oil and gas exploration activities, would detect and help prevent negative impacts on wildlife resources. The program would last a minimum of 5 years with an estimated cost of $5,000 per year. The project would be coordinated with Bureau of Reclamation and Fish and Wildlife Service Ecological Services Division.

LINKS:

RONS		MMS	
Project #	**Orgcode**	**Project #**	**Orgcode**

Recurring Staff Needs (FTEs)	**Number (1/10s)**	**Grade**	**FTE Cost**
FTEs: Managers			$0
Resource Specialists			$0
Education/Recreation Staff			$0
Biologists/Biotechnicians			$0

Printed April 14, 2006

Law Enforcement (Premium Pay).....	.....	.....	.....$0
Clerical/Administrative.....	.....	.....	.....$0
Maintenance/Equipment Operation.....	.....	.....	.....$0
TOTAL FTEs Needed.....	.....		.....$0

Funds Needed ($1000s):	One-Time	Recurring Base	First Year Need
Operations: Personnel Cost.....	.....	.....	
Equipment Cost.....	.....		
Facility Cost.....	.....		
Services/Supplies.....	.....$10	.....$5	
Miscellaneous Costs.....	.....$7	.....$2	
TOTAL Operations Cost..	.....$17	.....$7	.....$24

PROJECT NOTES:

CLARIFY STAFF: Minimum staffing category identification required for new /expanded stations.

CLARIFY COST: Justify deviations to standardized costs per FTE associated with minimum staff.

OUTCOMES: **Select up to 3 Outcomes: (Click box for list)**

Healthy Ecosystems
Waterfowl

☐ Station CCP approved 10/97+	☒ Station Goal/Objective	☐ FWS Recovery Plan	☐ Other Major P
☐ Station CCP/equivalent pre-10/97	☐ Station Step-down Mgmt Plan	☐ FWS Ecosystem Goal/Plan	☒ Legal Mandate

PLANNING LINK:

The information that this project would provide to the refuge would assist in reaching the station goals of providing safe habitat for the wintering waterfowl and resident wildlife on the refuge. It would provide an early warning system for environmental contaminant hazards.

RANK - STATION: .....5..... **REGIONAL:** ...374...

NATIONAL: ..... **GEOGRAPHIC AREA:** ...92...

Printed April 14, 2006

☐:

21660

Proj #: 97002 Washita NWR OK

New Station: Washita NWR

HQ: Washita NWR Type: NWR CD: OK06

Main ecosystem: Arkansas/Red Rivers

GeoArea: Oklahoma

Additional Stations covered:

ACTIVITY: *HABITAT MANAGEMENT* *Habitat*

3.d. Farming

MEASURES:

0 new acres will be farmed

0 % will be cooperatively farmed

960 existing acres will be farmed more effectively

TITLE: Enhance cropland management program

DESCRIPTION:

Thousands of geese (as many as 110,000) depend on the refuge to supplement their food requirements through the farming program. This project would expand the sustainable agriculture/integrated pest management practices on the refuge. If approved, additional equipment and seed will be purchased to increase the percentage of the farmed acres that we rotate soil building legumes on. This practice will improve the soil and limit weed growth which will increase grain and winter wheat productivity.

LINKS:	RONS Project #	RONS Orgcode	MMS Project #	MMS Orgcode
			02024	21660

Recurring Staff Needs (FTEs)	Number (1/10s)	Grade	FTE Cost
FTEs: Managers			$0
Resource Specialists			$0
Education/Recreation Staff			$0
Biologists/Biotechnicians			$0

Printed April 14, 2006

Law Enforcement (Premium Pay).....	.....	.....	.....$0
Clerical/Administrative.....	.....	.....	.....$0
Maintenance/Equipment Operation.....	.....	.....	.....$0
TOTAL FTEs Needed.....	.....		.....$0

Funds Needed ($1000s):	One-Time	Recurring Base	First Year Need
Operations: Personnel Cost.....	.....	.....	
Equipment Cost.....	.....$20		
Facility Cost.....	.....		
Services/Supplies.....	.....	.....$15	
Miscellaneous Costs.....	.....$23	.....$10	
TOTAL Operations Cost..	.....$43	.....$25	.....$68

PROJECT NOTES:

Due to the changes in the "Farm Bill" and the increase in goose and other wildlife use of cooperator's portion of crops on the refuge, we are concerned that some or all of our cooperative farmers will have to drop out of our farming program within the next few years. In order for us to be able to farm this additional acreage (a total of 2100 acres) and keep up with the

CLARIFY STAFF: Minimum staffing category identification required for new /expanded stations.

CLARIFY COST: Justify deviations to standardized costs per FTE associated with minimum staff.

OUTCOMES: **Select up to 3 Outcomes: (Click box for list)**

- Waterfowl
- Resident Wildlife
- Healthy Ecosystems

☐ Station CCP approved 10/97+	☒ Station Goal/Objective	☐ FWS Recovery Plan	☐ Other Major P
☒ Station CCP/equivalent pre-10/97	☒ Station Step-down Mgmt Plan	☒ FWS Ecosystem Goal/Plan	☐ Legal Mandate

PLANNING LINK:

The comprehensive management plan and the cropland management plan specify that the sustainable agriculture/integrated pest management practices described in this proposal will be used as part of the farming program on the refuge. These practices will also insure that the station goals concerning the production of waterfowl forage are met.

RANK - STATION: .....2..... **REGIONAL:** ...518...

NATIONAL: ..... **GEOGRAPHIC AREA:** ...173...

Printed April 14, 2006

□:

21660

Proj #: 97004 Washita NWR OK

New Station: Washita NWR

HQ: Washita NWR Type: NWR CD: OK06

Main ecosystem: Arkansas/Red Rivers

GeoArea: Oklahoma

Additional Stations covered:

ACTIVITY: *HABITAT MANAGEMENT* *Habitat*

3.f. Fire Management

MEASURES:

5,000 refuge acres burned under prescription

15 refuge burns will be conducted

0 non-refuge acres will be burned under prescription

2

TITLE: Construct fire equipment storage building

DESCRIPTION:

Refuge fire equipment is currently scattered in several different locations and the closest fire engine bay is far enough away from employees that time is lost when a fire breaks out. This delay costs additional habitat and/or equipment loss. This project would erect a storage shed within the headquarters area for storage of two pumper units and all fire equipment, tools and Personal Protective Equipment. The building would have concrete floor and wooden frame with metal siding. The building would need to be insulated and "heatable" to keep the water tanks from freezing.

LINKS:

RONS		MMS	
Project #	Orgcode	Project #	Orgcode

Recurring Staff Needs (FTEs)	Number (1/10s)	Grade	FTE Cost
FTEs: Managers			$0
Resource Specialists			$0
Education/Recreation Staff			$0
Biologists/Biotechnicians			$0

Printed April 14, 2006

Law Enforcement (Premium Pay).....	.....	.....	.....$0
Clerical/Administrative.....	.....	.....	.....$0
Maintenance/Equipment Operation.....	.....	.....	.....$0
TOTAL FTEs Needed.....	.....		.....$0

Funds Needed ($1000s):	One-Time	Recurring Base	First Year Need
Operations: Personnel Cost.....	.....	.....	
Equipment Cost.....	.....		
Facility Cost.....	.....$70		
Services/Supplies.....	.....$5	.....$1	
Miscellaneous Costs.....	.....$5	.....$9	
TOTAL Operations Cost..	.....$80	.....$10	.....$90

PROJECT NOTES:

CLARIFY STAFF: Minimum staffing category identification required for new /expanded stations.

CLARIFY COST: Justify deviations to standardized costs per FTE associated with minimum staff.

OUTCOMES: **Select up to 3 Outcomes: (Click box for list)**

- Waterfowl
- Other Migratory Birds
- Healthy Ecosystems

☐ Station CCP approved 10/97+	☒ Station Goal/Objective	☐ FWS Recovery Plan	☐ Other Major P
☐ Station CCP/equivalent pre-10/97	☐ Station Step-down Mgmt Plan	☐ FWS Ecosystem Goal/Plan	☐ Legal Mandate

PLANNING LINK:

Without the ability to respond quickly to refuge wildfires, we cannot meet the refuge goals of providing habitat for waterfowl and other wildlife. We also have the responsibility of enhancing our ability to protect refuge visitors and resources.

RANK - STATION: .....11..... **REGIONAL:** .....654.....

NATIONAL: ..... **GEOGRAPHIC AREA:** .....282.....

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☐:

21660

Proj #: 97001 **Washita NWR** **OK**

New Station: **Washita NWR**

HQ: **Washita NWR** **Type: NWR** **CD: OK06**

Main ecosystem: Arkansas/Red Rivers

GeoArea: Oklahoma

Additional Stations covered:

ACTIVITY: *HABITAT RESTORATION* *Habitat*

2.b. Upland Restoration

MEASURES: 100 refuge acres will be restored

0 off-refuge acres will be restored

TITLE: Expand maintenance capabilities

DESCRIPTION:

With current facilities, just changing oil or tires on a vehicle is difficult and only marginally safe. Without this addition many of the routine repair and maintenance jobs that could easily be done by the staff will continue to have to be done by an outside vendor at a higher cost which reduces the funds available to spend on wildlife needs. Expansion of the shop building to include a hydraulic lift, crew restroom, and welding room is needed to safely repair and maintain vehicles and other equipment used to complete refuge habitat management objectives. A maintenance worker position would be added to staff the facility.

LINKS:

RONS		MMS	
Project #	**Orgcode**	**Project #**	**Orgcode**

Recurring Staff Needs (FTEs)	**Number (1/10s)**	**Grade**	**FTE Cost**
FTEs: Managers			$0
Resource Specialists			$0
Education/Recreation Staff			$0
Biologists/Biotechnicians			$0

Printed April 14, 2006

Law Enforcement (Premium Pay).....	.....	.....	.....$0
Clerical/Administrative.....	.....	.....	.....$0
Maintenance/Equipment Operation.....	.....1.0.....	.....WG-08.....	.....$54
TOTAL FTEs Needed.....	.....1.0.....		.....$54

Funds Needed ($1000s):	One-Time	Recurring Base	First Year Need
Operations: Personnel Cost.....	.....	.....$54	
Equipment Cost.....	.....$130		
Facility Cost.....	.....$100		
Services/Supplies.....	.....$10	.....$5	
Miscellaneous Costs.....	.....$30	.....$15	
TOTAL Operations Cost..	.....$270	.....$74	.....$344

PROJECT NOTES:

Non staff operations costs deviate from standard due to construction and operation of the facility.

CLARIFY STAFF: Minimum staffing category identification required for new /expanded stations.

CLARIFY COST: Justify deviations to standardized costs per FTE associated with minimum staff.

This includes the cost of the expansion, equipment and supplies.

OUTCOMES: **Select up to 3 Outcomes: (Click box for list)**

- Waterfowl
- Other Migratory Birds
- Resident Wildlife

☐ Station CCP approved 10/97+	☒ Station Goal/Objective	☐ FWS Recovery Plan	☐ Other Major P
☐ Station CCP/equivalent pre-10/97	☐ Station Step-down Mgmt Plan	☐ FWS Ecosystem Goal/Plan	☐ Legal Mandate

PLANNING LINK:

This project would address all our refuge goals by providing a facility to repair and maintain the equipment we use to achieve those goals.

RANK - STATION: .....8..... **REGIONAL:** .....753.....

NATIONAL: ..... **GEOGRAPHIC AREA:** .....

Printed April 14, 2006

☐:

21660

Proj #: 01002 **Washita NWR** **OK**

New Station:

HQ: Washita NWR **Type: NWR** **CD: 0**

Main ecosystem: Arkansas/Red Rivers

GeoArea: Oklahoma

Additional Stations covered:

ACTIVITY: *PUBLIC EDUCATION & RECREATION* *People*

7.a. Provide Visitor Services

MEASURES:

20,000 new visitors will be served
8,000 existing visitors will be better served
100 % will support the top 6 priority public uses
0 % will support non-priority public uses

TITLE: Expand Public Education and Recreation Programs

DESCRIPTION:

At the present time, visitors to Washita Refuge are mostly consumptive users (hunters and anglers). The Refuge has the potential to reach a completely different segment of the visiting public if programs and facilities were established to support non-consumptive, priority activities such as outdoor education and wildlife observation. This project will provide for an Outdoor Recreation Planner to plan, implement, and coordinate environmental education on and off the refuge; develop and coordinate the volunteer program, special events, and outreach programs for the refuge; work with area schools to develop educational workshops, events, materials, and activities; and to prepare promotional and informational materials to explain and promote the functions, missions, and priorities of the

LINKS:

RONS		MMS	
Project #	**Orgcode**	**Project #**	**Orgcode**

Recurring Staff Needs (FTEs)	**Number (1/10s)**	**Grade**	**FTE Cost**
FTEs: Managers	0.0		$0
Resource Specialists	0.0		$0
Education/Recreation Staff	0.0		$0
Biologists/Biotechnicians	1.0	GS-07	$53

Printed April 14, 2006

Law Enforcement (Premium Pay).....	0.0	.....	$0
Clerical/Administrative.....	0.0	.....	$0
Maintenance/Equipment Operation.....	0.0	.....	$0
TOTAL FTEs Needed.....	1.0		$53

Funds Needed ($1000s):	One-Time	Recurring Base	First Year Need
Operations: Personnel Cost.....	.....	$53	
Equipment Cost.....	$30		
Facility Cost.....	$5		
Services/Supplies.....	.....	$5	
Miscellaneous Costs.....	$30	$5	
TOTAL Operations Cost..	$65	$63	$128

PROJECT NOTES:

With over 1 million people living within 135 miles of the Refuge, Washita desperately needs a position to conduct recreational, interpretive and environmental programs for the visiting public.

CLARIFY STAFF: Minimum staffing category identification required for new /expanded stations.

CLARIFY COST: Justify deviations to standardized costs per FTE associated with minimum staff.

OUTCOMES: **Select up to 3 Outcomes: (Click box for list)**

Public Education
Public Recreation

☒ Station CCP approved 10/97+	☐ Station Goal/Objective	☐ FWS Recovery Plan	☐ Other Major P
☐ Station CCP/equivalent pre-10/97	☐ Station Step-down Mgmt Plan	☐ FWS Ecosystem Goal/Plan	☐ Legal Mandate

PLANNING LINK:

Station CCP development in progress.

RANK - STATION: 7 **REGIONAL:** 754

NATIONAL: 999 **GEOGRAPHIC AREA:** 999

Printed April 14, 2006

☐:

21660

Proj #: 01001 **Washita NWR** **OK**

New Station:

HQ: Washita NWR **Type: NWR** **CD: 0**

Main ecosystem: Arkansas/Red Rivers

GeoArea: Oklahoma

Additional Stations covered:

ACTIVITY: *RESOURCE PROTECTION* *People*

6.e. Cultural Resource Management

MEASURES:

1 investigations will be conducted
20 sites will be documented
0 museum property items will be maintained
20 sites will be managed/protected

TITLE: Conduct Cultural Resources Survey

DESCRIPTION:

The area adjacent to the Washita River that is now the Refuge has been occupied by native peoples for centuries. Custer's 7th Cavalry is also reported to have encamped on what is now the Refuge prior to the Battle of the Washita. The refuge has several archeological sites previously identified. Some of the sites are in areas open to the public and are subject to illegal collecting. Funding from this project would underwrite a contracted cultural resources survey, an assessment of protection needs, and subsequent development of interpretive panels or displays. The survey is also needed to document additional sites in order to preclude separate surveys for each construction or habitat modification project.

LINKS:

RONS		MMS	
Project #	**Orgcode**	**Project #**	**Orgcode**

Recurring Staff Needs (FTEs)	**Number (1/10s)**	**Grade**	**FTE Cost**
FTEs: Managers	0.0		$0
Resource Specialists	0.0		$0
Education/Recreation Staff	0.0		$0
Biologists/Biotechnicians	0.0		$0

Printed April 14, 2006

Law Enforcement (Premium Pay).....	0.0		$0
Clerical/Administrative.....	0.0		$0
Maintenance/Equipment Operation.....	0.0		$0
TOTAL FTEs Needed.....	0.0		$0

Funds Needed ($1000s):	One-Time	Recurring Base	First Year Need
Operations: Personnel Cost.....			
Equipment Cost.....			
Facility Cost.....			
Services/Supplies.....	$45		
Miscellaneous Costs.....	$5	$2	
TOTAL Operations Cost..	$50	$2	$52

PROJECT NOTES:

CLARIFY STAFF: Minimum staffing category identification required for new /expanded stations.

CLARIFY COST: Justify deviations to standardized costs per FTE associated with minimum staff.

OUTCOMES: **Select up to 3 Outcomes: (Click box for list)**

Special Designation Areas
Public Education

☐ Station CCP approved 10/97+	☐ Station Goal/Objective	☐ FWS Recovery Plan	☐ Other Major P
☐ Station CCP/equivalent pre-10/97	☐ Station Step-down Mgmt Plan	☐ FWS Ecosystem Goal/Plan	☒ Legal Mandate

PLANNING LINK:

RANK - STATION: 10 **REGIONAL:** 755

NATIONAL: 999 **GEOGRAPHIC AREA:** 999

Printed April 14, 2006

21660

Proj #: 01003 **Washita NWR** **OK**

New Station:

HQ: Washita NWR **Type:** NWR **CD:** 0

Main ecosystem: Arkansas/Red Rivers

GeoArea: Oklahoma

Additional Stations covered:

ACTIVITY: *PUBLIC EDUCATION & RECREATION* *People*

7.b. Outreach

MEASURES:

6,000 participants will be at group presentations
400 people will view off-site exhibits
4 news releases will be issued
2 TV or radio spots will be developed
2 other special events will be hosted

TITLE: Expand Education Outreach Program

DESCRIPTION:

Develop and print a teacher's guide to the refuge. The guide will support state environmental education standards and include activities designed to educate students on the refuge's wildlife and habitat. The teacher's guide would enhance the environmental education program in the area, and would further efforts towards the National Wildlife Refuge System outreach goals. The guide will be prepared by staff and volunteers in partnership with local educators and will be used in the local school systems. There is an unmet demand locally for environmental education. No such program is available in any of the schools in the adjacent communities of Clinton, Elk City, Butler, and Hammon (combined population over 35,000).

LINKS:

RONS		MMS	
Project #	**Orgcode**	**Project #**	**Orgcode**

Recurring Staff Needs (FTEs)	**Number (1/10s)**	**Grade**	**FTE Cost**
FTEs: Managers	0.0		$0
Resource Specialists	0.0		$0
Education/Recreation Staff	0.0		$0
Biologists/Biotechnicians	0.0		$0

Printed April 14, 2006

Law Enforcement (Premium Pay).....	0.0		$0
Clerical/Administrative.....	0.0		$0
Maintenance/Equipment Operation.....	0.0		$0
TOTAL FTEs Needed.....	0.0		$0

Funds Needed ($1000s):	One-Time	Recurring Base	First Year Need
Operations: Personnel Cost.....	$22		
Equipment Cost.....	$5		
Facility Cost.....			
Services/Supplies.....	$4	$1	
Miscellaneous Costs.....	$4		
TOTAL Operations Cost..	$35	$1	$36

PROJECT NOTES:

This project will be accomplished by hiring a temporary GS-7 Environmental Education Specialist to coordinate the efforts of volunteers and local educators, and write the curriculum guide.

CLARIFY STAFF: Minimum staffing category identification required for new /expanded stations.

CLARIFY COST: Justify deviations to standardized costs per FTE associated with minimum staff.

OUTCOMES: **Select up to 3 Outcomes: (Click box for list)**

Public Education

☐ Station CCP approved 10/97+ ☒ Station Goal/Objective ☐ FWS Recovery Plan ☐ Other Major P
☐ Station CCP/equivalent pre-10/97 ☐ Station Step-down Mgmt Plan ☐ FWS Ecosystem Goal/Plan ☐ Legal Mandate

PLANNING LINK:

RANK - STATION: 6 **REGIONAL:** 756

NATIONAL: 999 **GEOGRAPHIC AREA:** 999

Printed April 14, 2006

☐:

21660

Proj #: 01004 **Washita NWR** **OK**

New Station:

HQ: Washita NWR **Type: NWR** **CD: 0**

Main ecosystem: Arkansas/Red Rivers

GeoArea: Oklahoma

Additional Stations covered:

ACTIVITY: *PLANNING* *People*

8.a. Comprehensive Conservation Planning

MEASURES:

30 % of CCP will be completed

2 stations will be covered

TITLE: Develop Public Use Step Down Plan

DESCRIPTION:

Public Use on Washita Refuge seems to have simply evolved into the present day state since the refuge's establishment 40 years ago. With the anticipated completion of the station's CCP within FY 2004, the timing is right to plan an orderly, policy-based approach to future Public Use on the refuge. Staffing, programs, and facilities outlined in the CCP need to be fleshed out in greater detail to provide a road map - and the basis for future budgeting and fiscal plans (RONS and MMS projects). Hiring a temporary Outdoor Recreation Planner to augment the existing refuge staff and coordinate with the Regional Visitor Assistance staff will insure quality control and timely completion of this important project.

LINKS:

RONS		MMS	
Project #	**Orgcode**	**Project #**	**Orgcode**

Recurring Staff Needs (FTEs)	**Number (1/10s)**	**Grade**	**FTE Cost**
FTEs: Managers	0.0		$0
Resource Specialists	0.0		$0
Education/Recreation Staff	0.0		$0
Biologists/Biotechnicians	0.0		$0

Printed April 14, 2006

Law Enforcement (Premium Pay).....	0.0	.....	$0
Clerical/Administrative.....	0.0	.....	$0
Maintenance/Equipment Operation.....	0.0	.....	$0
TOTAL FTEs Needed.....	0.0		$0

Funds Needed ($1000s):	One-Time	Recurring Base	First Year Need
Operations: Personnel Cost.....	$53	.....	
Equipment Cost.....	$15		
Facility Cost.....	.....		
Services/Supplies.....	$6	.....	
Miscellaneous Costs.....	$2	.....	
TOTAL Operations Cost..	$76	.....	$76

PROJECT NOTES:

Personnel cost based on salary for a Temporary Not To Exceed 1 Year GS-9.

CLARIFY STAFF: Minimum staffing category identification required for new /expanded stations.

CLARIFY COST: Justify deviations to standardized costs per FTE associated with minimum staff.

OUTCOMES: **Select up to 3 Outcomes: (Click box for list)**

Public Education
Public Recreation

☐ Station CCP approved 10/97+	☐ Station Goal/Objective	☐ FWS Recovery Plan	☐ Other Major P
☐ Station CCP/equivalent pre-10/97	☒ Station Step-down Mgmt Plan	☐ FWS Ecosystem Goal/Plan	☐ Legal Mandate

PLANNING LINK:

Station CCP development in progress.

RANK - STATION: 1 **REGIONAL:** 757

~~NATIONAL:~~ 999 **~~GEOGRAPHIC AREA:~~** 999

Printed April 14, 2006

□:

21660

Proj #: 02002 **Washita NWR** **OK**

New Station:

HQ: Washita NWR **Type: NWR** **CD: OK06**

Main ecosystem: Arkansas/Red Rivers

GeoArea: Oklahoma

Additional Stations covered:

ACTIVITY: *PUBLIC EDUCATION & RECREATION* *People*

7.a. Provide Visitor Services

MEASURES:

75 new visitors will be served
75 existing visitors will be better served
100 % will support the top 6 priority public uses
0 % will support non-priority public uses

TITLE: Construct fishing platform for mobility impaired fishermen

DESCRIPTION:

Construct an elevated fishing platform at Lakeview Recreation Area to accommodate mobility impaired anglers. The area receives year-round fishing pressure by many anglers who are unable to access the shoreline due to age or disability. This favored fishing point drops off sharply from the parking area and is battered by wind-driven waves, which requires rip rap at the shoreline - which is a deterrent to anglers. This project would provide a safe, level platform for wheelchair or ambulatory users from the parking loop to the lake.

LINKS:	RONS Project #	RONS Orgcode	MMS Project #	MMS Orgcode
			02007	21660

Recurring Staff Needs (FTEs)	Number (1/10s)	Grade	FTE Cost
FTEs: Managers	0.0		$0
Resource Specialists	0.0		$0
Education/Recreation Staff	0.0		$0
Biologists/Biotechnicians	0.0		$0

Printed April 14, 2006

Law Enforcement (Premium Pay).....	0.0	.....	$0
Clerical/Administrative.....	0.0	.....	$0
Maintenance/Equipment Operation.....	0.0	.....	$0
TOTAL FTEs Needed.....	0.0		$0

Funds Needed ($1000s):	One-Time	Recurring Base	First Year Need
Operations: Personnel Cost.....	.....	.....	
Equipment Cost.....	.....		
Facility Cost.....	.....		
Services/Supplies.....	$10	.....	
Miscellaneous Costs.....	.....	$1	
TOTAL Operations Cost..	$10	$1	$11

PROJECT NOTES:

CLARIFY STAFF: Minimum staffing category identification required for new /expanded stations.

CLARIFY COST: Justify deviations to standardized costs per FTE associated with minimum staff.

OUTCOMES: **Select up to 3 Outcomes: (Click box for list)**

Public Recreation

☐ Station CCP approved 10/97+	☐ Station Goal/Objective	☐ FWS Recovery Plan	☐ Other Major P
☐ Station CCP/equivalent pre-10/97	☐ Station Step-down Mgmt Plan	☐ FWS Ecosystem Goal/Plan	☒ Legal Mandate

PLANNING LINK:

This project will enable the refuge to comply with provisions of the Americans with Disabilities Act.

RANK - STATION: 5 **REGIONAL:** 758

NATIONAL: 999 **GEOGRAPHIC AREA:** 999

Printed April 14, 2006

Station	Project Title	Project No.	Ranks Region	Ranks Station	Budget Category	C M N F / S C H B	Costs $ (000) Yr1	Costs $ (000) Recurring	FTE
Washita NWR									
Tier1									
Optima NWR	Develop a Grassland Management Program	97004	305	2	Habitat	☐☒☐☐	$39	$7	
Optima NWR	Enhance refuge habitats and infrastructure (Maintenance Worker)	00001	332	1	Habitat	☒☐☐☐	$65	$61	1.00
Tier2									
Optima NWR	Improve refuge management	00002	233	2	Habitat	☐☐☐☐	$65	$75	1.00
Optima NWR	Hire Full Time Law Enforcement Officer	03001	877	1	People	☐☐☐☐	$87	$75	1.00

	#Projects	Total Mgr	Total Res Spec	Total Bio's	Total LE	Total Ed/Rec	Total Cler/Admin	Total Maint			
Station Totals	4	1.00	0.00	0.00	1.00	0.00	0.00	1.00	$256	$218	3.00

☐:

21661

Proj #: 97004 **Optima NWR** **OK**

New Station:

HQ: Washita NWR **Type: NWR** **CD: OK06**

Main ecosystem: Arkansas/Red Rivers

GeoArea: Oklahoma

Additional Stations covered:

ACTIVITY: *HABITAT RESTORATION* *Habitat*

2.b. Upland Restoration

MEASURES:

500 refuge acres will be restored

0 off-refuge acres will be restored

TITLE: Develop a Grassland Management Program

DESCRIPTION:

Develop a grassland management program to improve the productivity of native prairies. A healthy, viable population of indigenous species of wildlife is one of the objectives for this refuge. However, some of the old farm fields that have been fallow for several years are heavily weed infested and in need of restoration. The management program will include vegetation surveys, prescribed burning and reseeding native grasses in these areas.

LINKS:

RONS		MMS	
Project #	**Orgcode**	**Project #**	**Orgcode**

Recurring Staff Needs (FTEs)	**Number (1/10s)**	**Grade**	**FTE Cost**
FTEs: Managers			$0
Resource Specialists			$0
Education/Recreation Staff			$0
Biologists/Biotechnicians			$0

Printed April 14, 2006

Law Enforcement (Premium Pay).....	.....	.....	.....$0
Clerical/Administrative.....	.....	.....	.....$0
Maintenance/Equipment Operation.....	.....	.....	.....$0
TOTAL FTEs Needed.....	.....		.....$0

Funds Needed ($1000s):	One-Time	Recurring Base	First Year Need
Operations: Personnel Cost.....	.....	.....	
Equipment Cost.....	.....$15		
Facility Cost.....	.....		
Services/Supplies.....	.....$15	.....$2	
Miscellaneous Costs.....	.....$9	.....$5	
TOTAL Operations Cost..	.....$39	.....$7	.....$46

PROJECT NOTES:

CLARIFY STAFF: Minimum staffing category identification required for new /expanded stations.

CLARIFY COST: Justify deviations to standardized costs per FTE associated with minimum staff.

OUTCOMES: **Select up to 3 Outcomes: (Click box for list)**

Healthy Ecosystems
Waterfowl

☐ Station CCP approved 10/97+	☒ Station Goal/Objective	☐ FWS Recovery Plan	☐ Other Major P
☐ Station CCP/equivalent pre-10/97	☐ Station Step-down Mgmt Plan	☒ FWS Ecosystem Goal/Plan	☐ Legal Mandate

PLANNING LINK:

This improvement will enhance the health of the native prairie habitat.

RANK - STATION: .....2..... **REGIONAL:** ...305...

NATIONAL: ..... **GEOGRAPHIC AREA:** ....71....

Printed April 14, 2006

☐:

21661

Proj #: 00001 **Optima NWR** **OK**

New Station:

HQ: Washita NWR **Type: NWR** **CD: OK06**

Main ecosystem: Arkansas/Red Rivers

GeoArea: Oklahoma

Additional Stations covered:

ACTIVITY: *HABITAT RESTORATION* *Habitat*

2.b. Upland Restoration

MEASURES: 300 refuge acres will be restored

0 off-refuge acres will be restored

TITLE: Enhance refuge habitats and infrastructure (Maintenance Worker)

DESCRIPTION:

Provide a full time maintenance worker for the Optima National Wildlife Refuge. This 4,300-acre, unstaffed satellite refuge has received minimal attention due to lack of personnel and distance from the headquarters refuge (3 hour drive). Adding a maintenance position will allow the restoration of native vegetation, control of noxious weeds and better maintenance of refuge infrastructure. This position will also help with wildfire suppression and provide public access. Without this position, the refuge will continue to exist at a level minimally above "moth balled" status, rather than developing into a showcase of healthy prairie habitat. The adjacent State Wildlife Area and Corps of Engineers lands provide opportunities for coordinated management efforts, potentially multiplying the

LINKS:	**RONS**		**MMS**	
	Project #	**Orgcode**	**Project #**	**Orgcode**

Recurring Staff Needs (FTEs)	**Number (1/10s)**	**Grade**	**FTE Cost**
FTEs: Managers			$0
Resource Specialists			$0
Education/Recreation Staff			$0
Biologists/Biotechnicians			$0

Printed April 14, 2006

Law Enforcement (Premium Pay).....	.....	.....	.....$0
Clerical/Administrative.....	.....	.....	.....$0
Maintenance/Equipment Operation.....	.....1.0.....	.....WG-07.....	.....$51
TOTAL FTEs Needed.....	.....1.0.....		.....$51

Funds Needed ($1000s):	One-Time	Recurring Base	First Year Need
Operations: Personnel Cost.....	.....	.....$51	
Equipment Cost.....	.....$30		
Facility Cost.....	.....$5		
Services/Supplies.....	.....	.....$5	
Miscellaneous Costs.....	.....$30	.....$5	
TOTAL Operations Cost..	.....$65	.....$61	.....$126

PROJECT NOTES:

CLARIFY STAFF: Minimum staffing category identification required for new /expanded stations.

Minimum Staffing Needs Category 6.

CLARIFY COST: Justify deviations to standardized costs per FTE associated with minimum staff.

OUTCOMES: **Select up to 3 Outcomes: (Click box for list)**

Healthy Ecosystems
Public Recreation

☐ Station CCP approved 10/97+ ☒ Station Goal/Objective ☐ FWS Recovery Plan ☐ Other Major P
☐ Station CCP/equivalent pre-10/97 ☐ Station Step-down Mgmt Plan ☐ FWS Ecosystem Goal/Plan ☐ Legal Mandate

PLANNING LINK:

Provide adequate management and protection of the refuge.

RANK - STATION: .....1..... **REGIONAL:** .....332.....

NATIONAL: ..... **GEOGRAPHIC AREA:** .....76.....

Printed April 14, 2006

☐:

21661

Proj #: 00002 **Optima NWR** **OK**

New Station:

HQ: Washita NWR **Type: NWR** **CD: OK06**

Main ecosystem: Arkansas/Red Rivers

GeoArea: Oklahoma

Additional Stations covered: Also includes work on Washita NWR

ACTIVITY: *HABITAT RESTORATION* *Habitat*

2.b. Upland Restoration

MEASURES: 3,000 refuge acres will be restored

0 off-refuge acres will be restored

TITLE: Improve refuge management

DESCRIPTION:

This 4,300 acre unstaffed satellite refuge has received minimal attention due to lack of personnel, and extreme distance from the headquarters refuge (3 hours). This project funds a dedicated Refuge Operations Specialist to plan and coordinate the restoration of native vegetation, control of noxious weeds, public education and recreation, facilities construction and maintenance, wildfire suppression, law enforcement, and budget and administration. Without this position, the refuge will continue to merely exist, rather than develop into a showcase of healthy prairie habitat. The adjacent State Wildlife Area and Corps of Engineers lands lend opportunities for coordinated management efforts, potentially multiplying the benefit to wildlife and habitat. These improvements will

LINKS:

RONS		MMS	
Project #	**Orgcode**	**Project #**	**Orgcode**
		00001	21661

Recurring Staff Needs (FTEs)	**Number (1/10s)**	**Grade**	**FTE Cost**
FTEs: Managers	1.0	GS-09	$65
Resource Specialists			$0
Education/Recreation Staff			$0
Biologists/Biotechnicians			$0

Printed April 14, 2006

Law Enforcement (Premium Pay).....	.....	.....	.....$0
Clerical/Administrative.....	.....	.....	.....$0
Maintenance/Equipment Operation.....	.....	.....	.....$0
TOTAL FTEs Needed.....	...1.0...		.....$65

Funds Needed ($1000s):	One-Time	Recurring Base	First Year Need
Operations: Personnel Cost.....	.....	.....$65	
Equipment Cost.....	.....$30		
Facility Cost.....	.....$5		
Services/Supplies.....	.....	.....$5	
Miscellaneous Costs.....	.....$30	.....$5	
TOTAL Operations Cost..	.....$65	.....$75	.....$140

PROJECT NOTES:

CLARIFY STAFF: Minimum staffing category identification required for new /expanded stations.

Position identified in Minimum Staffing Needs exercise.

CLARIFY COST: Justify deviations to standardized costs per FTE associated with minimum staff.

OUTCOMES: **Select up to 3 Outcomes: (Click box for list)**

- Healthy Ecosystems
- Other Migratory Birds
- Resident Wildlife

☐ Station CCP approved 10/97+	☒ Station Goal/Objective	☐ FWS Recovery Plan	☐ Other Major P
☐ Station CCP/equivalent pre-10/97	☐ Station Step-down Mgmt Plan	☐ FWS Ecosystem Goal/Plan	☐ Legal Mandate

PLANNING LINK:

Provide adequate management and protection of the refuge.

RANK - STATION: .....2..... **REGIONAL:** ...233...

NATIONAL: ...999... **GEOGRAPHIC AREA:** .....

Printed April 14, 2006

☐:

21661

Proj #: 03001 **Optima NWR** **OK**

New Station:

HQ: Washita NWR **Type: NWR** **CD: OK06**

Main ecosystem: Arkansas/Red Rivers

GeoArea: Oklahoma

Additional Stations covered:

ACTIVITY: *RESOURCE PROTECTION* *People*

6.a. Law Enforcement

MEASURES:

60 incidents will be documented
400 other public contacts will be made
15 cases will be assisted
40 NOVs and State citations will be issued
0 written warnings will be issued

TITLE: Hire Full Time Law Enforcement Officer

DESCRIPTION:

Hire a full time Law Enforcement Officer to support the needs of both Optima and Washita Refuges. There is no one assigned to either refuge at this time with law enforcement authority - though both refuges offer hunting, fishing, and other Public Use programs; incur some illegal poaching of resident big game and waterfowl annually; have trespass and animal trespass problems; and suffer some losses to theft and vandalism each year.

LINKS:

RONS		MMS	
Project #	**Orgcode**	**Project #**	**Orgcode**

Recurring Staff Needs (FTEs)	**Number (1/10s)**	**Grade**	**FTE Cost**
FTEs: Managers	0.0		$0
Resource Specialists	0.0		$0
Education/Recreation Staff	0.0		$0
Biologists/Biotechnicians	0.0		$0

Printed April 14, 2006

Law Enforcement (Premium Pay).....	1.0	GS-09	$65
Clerical/Administrative.....	0.0		$0
Maintenance/Equipment Operation.....	0.0		$0
TOTAL FTEs Needed.....	1.0		$65

Funds Needed ($1000s):	One-Time	Recurring Base	First Year Need
Operations: Personnel Cost.....	$40	$65	
Equipment Cost.....	$35		
Facility Cost.....	$5		
Services/Supplies.....	$5	$5	
Miscellaneous Costs.....	$2	$5	
TOTAL Operations Cost..	$87	$75	$162

PROJECT NOTES:

CLARIFY STAFF: Minimum staffing category identification required for new /expanded stations.

CLARIFY COST: Justify deviations to standardized costs per FTE associated with minimum staff.

OUTCOMES: **Select up to 3 Outcomes: (Click box for list)**

- Public Recreation
- Waterfowl
- Resident Wildlife

☐ Station CCP approved 10/97+	☐ Station Goal/Objective	☐ FWS Recovery Plan	☒ Other Major P
☐ Station CCP/equivalent pre-10/97	☐ Station Step-down Mgmt Plan	☐ FWS Ecosystem Goal/Plan	☐ Legal Mandate

PLANNING LINK:

Service Policy: "Recommendations for Developing Interim and Long-term Strategies to Assess and Deploy Law Enforcement Resources of the NWRS."

RANK - STATION: 1 **REGIONAL:** 877

NATIONAL: 999 **GEOGRAPHIC AREA:** 999

Printed April 14, 2006

APPENDIX G

WASHITA/OPTIMA NWR COMPLEX

ARKANSAS/RED RIVERS ECOSYSTEM PLAN

ARKANSAS/RED RIVERS ECOSYSTEM PLAN

U.S. Fish and Wildlife Service
Arkansas/Red Rivers Ecosystem Team

August 1996

ARKANSAS/RED RIVERS ECOSYSTEM PLAN

TABLE OF CONTENTS

INTRODUCTION

This Ecosystem Plan and its subsequent updates will help guide the U.S. Fish and Wildlife Service (Service) as it sets priorities, allocates resources, and conducts its activities and programs in the Arkansas/Red River Basins to meet the mandates established for it by the American public. The Service intends to accomplish the objectives, strategies, and action items contained in this Plan by focusing its activities on key ecosystem components and other influences on fish and wildlife resources in cooperation with partner agencies, organizations and individuals from throughout the Arkansas/Red Rivers Ecosystem.

The terms "Arkansas/Red Rivers Ecosystem", "ecosystem", "Ark/Red", and "Arkansas/Red River Basin" are used interchangeably throughout this document, and are meant to refer to the biological resources of the Arkansas and Red river basins and the habitats upon which they depend.

Reference should be made to the memorandum and accompanying concept document of March 8, 1994, from the Service Directorate ("Ecosystem Approach to Fish and Wildlife Resource Conservation") for a discussion of the genesis and principles espoused by our agency related to this endeavor. Above all, the reader should realize that this is not an effort to manage the entire ecosystem, but rather a concept by which the Service will discharge its particular responsibilities with the needs of the ecosystem in mind.

While the efforts of the Service are keyed to managing Federal trust fish and wildlife resources of the Arkansas/Red Rivers Ecosystem, a parallel concern is maximizing the quality of human life, both within this ecosystem and nationwide. Maintaining a healthy biological heritage within the ecosystem is inextricably tied to the well-being of its human population; the reverse also is true. To achieve our goal and objectives, we must successfully communicate these concepts to the public.

This Plan was assembled by a team of Service personnel from stations within the Arkansas/Red Rivers Basin. Valuable information on ecosystem issues and solutions was received from numerous sources outside the Service, which included personnel from other Federal agencies, State agencies, universities, conservation organizations, and most especially interested citizens. We thank those who took the time to contribute their thoughts and ideas.

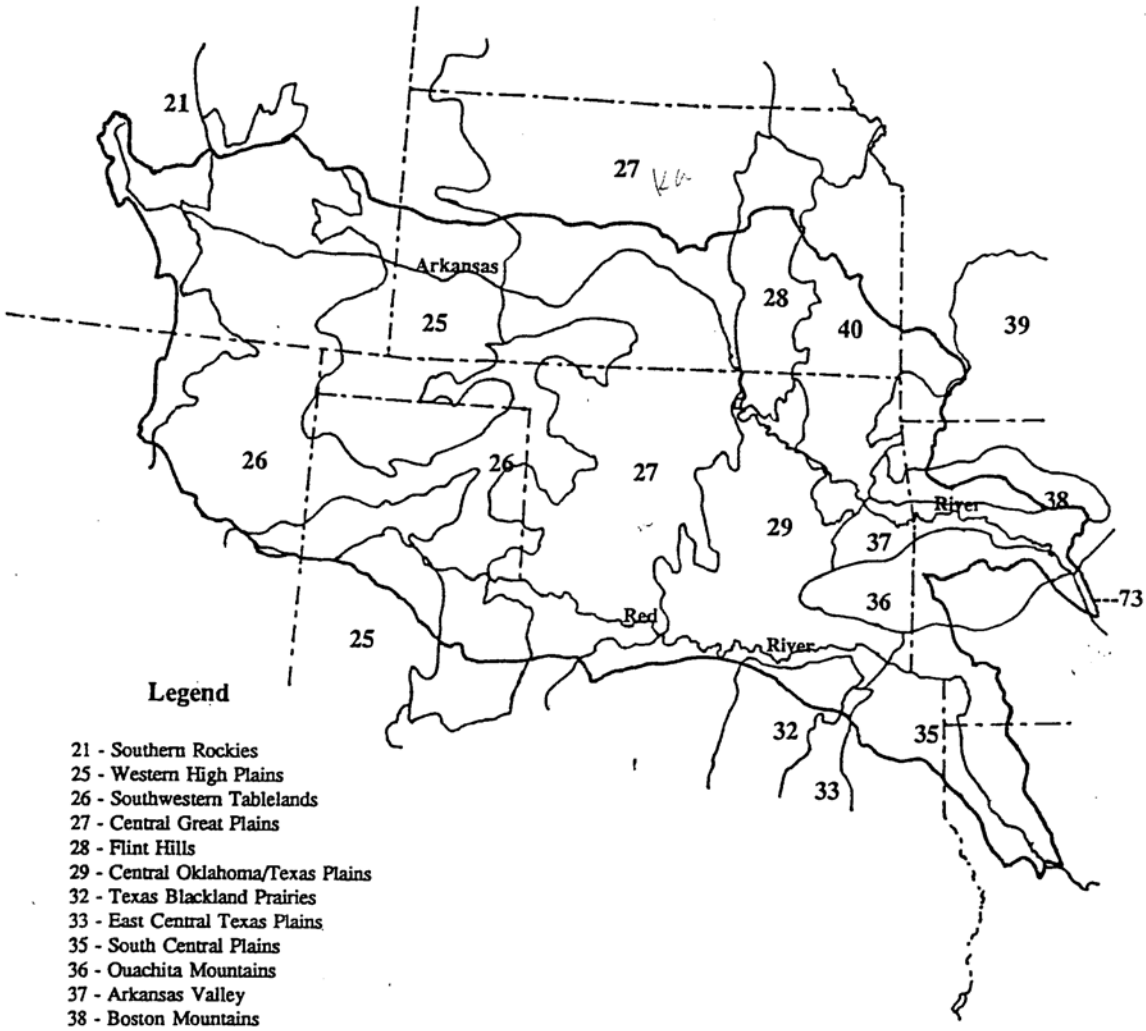
Finally, this document constitutes neither regulation nor binding policy, and at most constitutes internal guidance that will be revisited regularly and often.

ECOSYSTEM VISION STATEMENT

The vision of the Arkansas/Red Rivers Ecosystem Team is the efficient and effective management of Federal trust fish and wildlife resources of the ecosystem to conserve and restore biodiversity for the benefit of the people.

ECOSYSTEM RESOURCE DESCRIPTION

The Arkansas/Red Rivers Ecosystem contains approximately 245,000 square miles and extends from the Rocky Mountains of Colorado to the bayous of Louisiana, and includes all of Oklahoma and parts of seven other states (see Figure 1 map). Elevations within the Ark/Red



Omernik, J.M. 1987. Ecoregions of the Coterminous U-S-, Annual of the Assoc. American Geologists, 77(1):118-125.

Arkansas/Red Rivers Ecosystem - Omernick Ecoregions[1]

range from over 14,000 feet ngvd (national geodetic vertical datum) to less than 300 feet ngvd along the Red River in Louisiana. Because of the diversity in land forms, soils, average annual precipitation, and other factors, the Arkansas/Red Rivers Ecosystem supports the greatest diversity of fish and wildlife resources of any Service ecosystem nationwide.

Portions of four Service Regions occur within the Arkansas/Red Rivers Ecosystem (i.e., Regions 2, 3, 4, and 6). Twenty-four Service field stations are located here, including 16 National Wildlife Refuges (NWR), four National Fish Hatcheries (NFH), three Law Enforcement Offices, two Fishery Resources offices, and one Ecological Services Field Office. In addition, numerous other Service installations have jurisdiction over portions of the Arkansas/Red Rivers Ecosystem. Overall, more than 40 Service installations administer programs within the ecosystem.

Omernick[1] defined 15 ecoregions that occur within the Arkansas/Red Rivers Ecosystem. Each of these is discussed briefly below, as a background to the management objectives and strategies that follow. We have added a 16th ecoregion, the Big Rivers. Because of the importance and uniqueness of the habitats found along the larger streams of the Ark/Red, and because these streams and their floodplains traverse multiple ecoregions, we believe such an addition to be appropriate.

Southern Rockies - This ecoregion extends from central Colorado southward in an irregular band into northeastern New Mexico. Elevations vary from above 14,000 feet ngvd to below 6,000 feet ngvd in some intermontane "parks". Native forest communities of ponderosa pine and Douglas fir dominate the montane zone, with aspen and lodgepole pine occurring on disturbed sites. Below the montane zone, grasses, pinyon-juniper and shrub species predominate. The Leadville NFH and Colorado Fishery Resources Office are located in this ecoregion.

Threats to the biological integrity of this ecoregion include logging, mining activities and recreational development. Opportunities exist to work with public land management and regulatory agencies to conserve and restore important fish and wildlife resources in the Southern Rockies.

Southwestern Tablelands - The Southwestern Tablelands extend throughout much of eastern Colorado, northeastern New Mexico, and portions of northwestern Oklahoma and Texas. The topography consists largely of sandstone and gypsum mesas and outcrops bisected by tributaries of the Arkansas, Cimarron, North Canadian, and Canadian rivers. The natural communities of this ecoregion are dominated by shortgrass prairies and shinnery oak scrub. Average annual precipitation ranges from less than 15 inches to about 21 inches. Maxwell NWR, Washita NWR and Mora NFH are located within this ecoregion.

Resource threats in this ecoregion center on conversion of native grasslands and scrublands to agricultural production, and overgrazing by domestic livestock. Management opportunities include improvements in grazing regimes, fencing riparian zones, and restoration of native grasslands. Species of special management concern in this ecoregion include the lesser

prairie chicken, other ground nesting grassland birds, and swift fox.

Western High Plains - Southwestern Kansas, southeastern Colorado, much of the Oklahoma panhandle, and portions of the Texas panhandle north and south of Amarillo fall within this Omernick ecoregion. Much of this area slopes gently to the east, with elevations ranging from 4,400 feet ngvd to 2,800 feet ngvd. Shortgrass prairie dominates the natural communities of this ecoregion, with playa lakes occurring throughout. Average annual precipitation is about 20 inches. Optima NWR and Buffalo Lake NWR occur in the Western High Plains.

Large areas of the ecoregion have been converted to irrigated agriculture, drawing upon the Ogallala aquifer as a water source. In the remaining areas of shortgrass prairie habitat, invasion by honey mesquite has degraded habitat for native wildlife species as well as for livestock grazing. Restoration of playa lakes and surrounding shortgrass prairie habitat in cooperation with partner agencies and landowners is a high priority.

Central Great Plains - This ecoregion extends in a broad band from south-central Kansas through western Oklahoma and the northwestern portion of the body of Texas, sloping from 2,000 feet ngvd in the west to about 1,000 feet ngvd in the east. The area consists of rolling plains bisected by most of the major east-west flowing rivers of the Arkansas/Red Rivers Ecosystem. Annual precipitation averages about 27 inches. Native vegetative communities are dominated by mid to tallgrass prairie, with riparian forest of varying widths occurring within the floodplains of the major streams. A notable geographic feature of this ecoregion is the Wichita Mountains of southwestern Oklahoma. Quivira NWR, Salt Plains NWR and Wichita Mountains NWR are found in this ecoregion. In addition, Cheyenne Bottoms Wildlife Management Area, one of two Internationally recognized Ramsar wetland sites located in the Ark/Red, is located in the northern part of the Central Great Plains ecoregion.

Cultivated agriculture and livestock grazing have altered nearly all of the natural communities of this Ark/Red ecoregion. Invasion of much of the remaining native grasslands by eastern red cedar has appreciably decreased its wildlife resource and grazing value. Opportunities exist to improve grazing regimes and restore native grasslands through a variety of Federal, State and local programs and initiatives.

Flint Hills - Within the Arkansas/Red Rivers Ecosystem the Flint Hills ecoregion extends in a roughly 30-mile wide band from north-central Oklahoma northward to the northern Arkansas/Red Rivers Ecosystem boundary in Kansas. Precipitation averages up to 40 inches annually in this ecoregion. The limestone-derived soils support a native tallgrass prairie community, which is probably the most intact of any of the ecoregions in the Arkansas/Red Rivers Ecosystem. Flint Hills NWR occurs in the northern portion of this ecoregion.

Threats to important fish and wildlife resources within this ecoregion include construction and operation of stream impoundments, livestock grazing and further fragmentation of the tallgrass

prairie ecosystem by transportation, utility and municipal development. Opportunities exist to improve grazing regimes on private lands, and to work with Federal and State agencies and private organizations, such as The Nature Conservancy and Sutton Avian Research Center to gain more information to better manage declining resources such as grassland birds within the Flint Hills and other ecoregions.

Central Oklahoma/Texas Plains - This ecoregion is found from north-central Oklahoma to southern Oklahoma, and includes much of the Red River drainage in northern Texas. The overall slope is to the southeast, from 1,200 feet ngvd in the north to 600 feet ngvd along the Red River. Average annual precipitation is about 40 inches. The natural vegetation consists of a mixture of post oak-blackjack oak forest and savannah and tallgrass prairie communities. The topography is generally rolling to hilly, with the Arbuckle Mountains of south-central Oklahoma forming a distinct feature of this ecoregion. Deep Fork NWR, Tishomingo NWR, Hagerman NWR, Little River NWR, and Tishomingo NFH occur within this ecoregion.

The majority of this ecoregion has been fragmented into relatively small private ownerships, making management of key biological components difficult. The opportunities that exist for management of important fish and wildlife resources center on the few larger public holdings and smaller private ownerships where cooperative projects designed to protect or restore wetland, prairie and savannah habitats can be implemented.

Texas Black Prairies - The northern portion of this ecoregion extends into the Arkansas/Red Rivers Ecosystem in northeastern Texas. The natural communities are dominated by tallgrass prairies, although the vast majority have been converted to cultivated agriculture. The topography is generally level to gently rolling and averages about 600 feet ngvd. Opportunities for cooperative restoration of wetland and native prairie habitat exist on individual private land holdings.

East Central Texas Plains - A very small portion of this ecoregion occurs in the Arkansas/Red Rivers Ecosystem just east of the Texas Black Prairies. The natural communities of this ecoregion are similar to those of the southeastern part of the Central Oklahoma/Texas Plains, with post oak-blackjack oak and tallgrass prairie species predominating. Management opportunities here are similar to those in that ecoregion through cooperative efforts with private landowners.

Central Irregular Plains - Large portions of northeastern Oklahoma and southeastern Kansas are included in this ecoregion. Precipitation averages about 40 inches annually. The predominant natural community is tallgrass prairie. Low rolling hills dominate the landscape, which slopes gently to the southeast. Some post oak-blackjack forest and cave habitats also occur in this ecoregion, largely in areas of limestone outcrops and locations with thinner soils. The Arkansas River bisects the southern portion of this ecoregion, with the Neosho River and its tributaries draining the majority of the area.

Much of this ecoregion has been converted to cultivated agriculture and introduced

grassland pasture. Various development activities also have resulted in habitat fragmentation in additional areas. Conservation and restoration of wetlands and native prairies are possible on private lands throughout the ecoregion on a relatively small scale through Service programs and partnerships with public and private cooperators.

Ozark Highlands/Boston Mountains - These ecoregions extend into northeastern Oklahoma and northwestern Arkansas, with topography consisting of rugged hills and low mountains bisected by numerous streams. The highest elevations reach above 1,500 feet ngvd, with the general slope of the area to the southwest, and drainage primarily to the Illinois and Neosho rivers. Annual precipitation averages over 42 inches. The natural communities of this ecoregion are dominated by a western extension of the oak-hickory forest. More mesic floodplain forests occur along the major streams of the region. An additional dominant feature of these ecoregions is the extensive network of cave habitats formed in the underlying limestone parent material. Numerous rare, endangered and endemic fish and wildlife species are associated with and dependent upon these habitats. The Ozark Plateau NWR, Logan Cave NWR and Neosho NFH are located within these ecoregions.

Opportunities exist to work with private landowners to manage various biological components of these ecoregions. Special emphasis is given to formation of partnerships with private landowners for protection and management of cave resources within these ecoregions.

Arkansas Valley - The lower portion of the Arkansas River valley from the confluence with the Neosho River downstream to eastern Arkansas form this ecoregion. Annual precipitation here averages over 45 inches. In addition to the river floodplain, this ecoregion also includes several isolated hills, including the Sans Bois Mountains in Oklahoma which rise over 1,200 feet above the surrounding floodplain. Dominant natural vegetation of the Arkansas River floodplain includes forests of oak, elm and hackberry, with well-developed understories. Sequoyah NWR and Holla Bend NWR are located in this ecoregion. Natural communities of the isolated hills are typical of the Ozark Highlands/Boston Mountains and Central Oklahoma/Texas Plains.

The natural communities of this ecoregion have been significantly altered by timber harvesting, cultivated agriculture, and development of the McClellan-Kerr Arkansas River Navigation System. The series of locks, dams and reservoirs associated with the latter have inundated vast areas of this ecoregion, and resulted in additional fish and wildlife resource impacts from secondary development activities. Opportunities exist to work with other Federal and State agencies and private landowners to conserve and restore wetland and forested habitats in this ecoregion.

Ouachita Mountains - This ecoregion is located in southeastern Oklahoma and southwestern Arkansas. Elevations vary from nearly 3,000 feet ngvd to about 700 feet ngvd. Annual precipitation in this ecoregion approaches 60 inches annually in some locations. The dominant vegetation of the natural communities include shortleaf pine savannah with an understory

of tall grasses. Oak-hickory forest communities are found in more mesic north-facing slopes and in ravines. In addition bottomland hardwood forests occur in the floodplains of the larger streams draining this ecoregion, including the Kiamichi, Glover, Cossatot, and Little rivers.

Significant impacts to the natural communities of this ecoregion are largely associated with commercial forest management and conversion to other uses, such as agriculture and reservoir impoundments. Large areas of the Ouachitas have been clear-cut and converted to loblolly pine plantations, with significant effects on sensitive species such as the red-cockaded woodpecker and leopard darter. Distinct opportunities exist to coordinate with other Federal and State agencies and large corporate landowners in this ecoregion to restore pine savannah, floodplain forest and stream habitat. A proposed large-scale land exchange between the Weyerhauser Corporation and U.S. Forest Service potentially can provide considerable opportunity for such cooperative recovery efforts.

South Central Plains - Portions of southeastern Oklahoma, southwestern Arkansas, northeastern Texas, and northwestern Louisiana drained by the Red River make up this ecoregion. Precipitation in this ecoregion averages over 45 inches annually. Dominant natural communities consist of moist upland forests of gums and oaks, as well as true bottomland hardwood forests along streams and rivers. Stands of loblolly pine also occur in the more mesic upland sites. The Little River and Cossatot NWR's and Natchitoches NFH are located in this ecoregion, as well as Caddo Lake, one of two Ramsar wetland sites found in the ecosystem.

Major threats to the biological resources of the South Central Plains include drainage of floodplain wetlands for agricultural and forestry management purposes, stream channelization for navigation and other related developments, and clearing of forested habitats. Despite the many threats to the fish and wildlife resources of this ecoregion, many opportunities also exist to restore wetland and forested habitats in cooperation with Federal and State agencies, and with private landowners.

Mississippi Alluvial Plain - A very small part of this ecoregion enters the Ark/Red along the Arkansas River in eastern Arkansas. This area experiences about 50 inches of precipitation annually. The natural vegetation of this ecoregion was dominated by bottomland hardwood forest species, although the vast majority of the area has been converted to cultivated agriculture.

In cooperation with other agencies and individual landowners, there is a great opportunity to restore wetland and forested habitats to the Mississippi Alluvial Plain.

Big Rivers -While not defined by Omernick as an ecoregion, due to the importance of the Big Rivers within the Arkansas/Red Rivers Ecosystem to management of important fish and wildlife resources, the river beds and associated riparian zones of the following streams are included within a separate ecoregion: Arkansas, Red, Cimarron, Beaver/North Canadian, Canadian, Washita, Deep Fork, and Neosho rivers. A similar characteristic

of the natural habitat of all of these rivers is the presence of a shifting alluvial substrate which is periodically scoured of vegetation and formed into gravel and sandbar habitat and braided stream habitat by recurring flood events. Sandhill cranes, Interior least terns, waterfowl, bald eagles, shorebirds, numerous other migratory and resident bird species, and a distinct assemblage of fish and other aquatic species depend upon these habitats for roosting, nesting, spawning, and feeding habitat.

Much of the original habitat provided by the Big Rivers ecoregion has been lost to reservoir inundation, channelization, urbanization, water depletion, and other human induced impacts. Opportunities exist, in cooperation with land and water management agencies, to restore some degree of the habitat value provided by this riverine habitat for important fish and wildlife resources.

OBJECTIVES, STRATEGIES AND ACTION ITEMS

A. WATER CONSERVATION

OBJECTIVE 1. WATER QUANTITY MAINTENANCE AND IMPROVEMENT

With partners, and under the constraints of State primacy in matters concerning water allocation, the Service will seek methods to facilitate the conservation of water resources for the management of important fish and wildlife species and habitats, with emphasis on areas downstream of Federal water management facilities. Efforts will concentrate on the maintenance of instream flows and groundwater resources to support native flora and fauna. Maintenance and development of an adequate water supply for wetlands management on existing Service lands and partners' projects also will be emphasized. Specific areas of concern include instream flows, springs, caves, and groundwater and alluvial aquifers.

Strategy 1. Facilitate adequate stream flows for conservation of fish and wildlife resources.

A. Participate in water needs assessments to inventory water resources in the Arkansas/Red Rivers Ecosystem and provide background on available water resources.

B. Participate in stream compact commissions and similar organizations to better understand and influence water resources allocation in the Ark/Red.

C. Determine recommended stream flows regimes for major rivers and their tributaries within the Ark/Red; emphasize flow needs downstream of federally-controlled facilities.

D. Identify principal water quantity management authorities and their user groups in the Ark/Red Ecosystem.

E. Maintain adequate system flows in the Arkansas/Red Rivers Ecosystem by protecting, restoring, and enhancing riparian/floodplain wetlands as natural water storage and release areas.

F. Obtain ready access to discharge and water level records via Internet and CD-ROM technology.

Strategy 2. Facilitate conservation of groundwater resources.

A. Identify recharge and outflow areas for the major aquifers of the Ark/Red.

B. Identify conservation methods to maintain and restore groundwater levels.

Strategy 3. Facilitate adequate water supplies for wetland management.

A. With partners, identify water resources essential to management of existing wetland habitats, and restoration of degraded wetland habitats, both on and off Service lands.

OBJECTIVE 2. WATER QUALITY MAINTENANCE AND IMPROVEMENT

With partners and stakeholders, assure that Federal and State water quality standards are established and applied in a manner that protects and enhances all aquatic resources. These strategies and actions will promote restoration of focus species and habitats while contributing to overall biodiversity conservation in the Ark/Red.

Strategy 1. Maintain and improve surface water quality for conservation of fish and wildlife resources.

A. Cooperate with Federal/State agriculture agencies to improve non-point source water quality in Ark/Red streams.

B. Increase use of the Partners for Wildlife Program (PWP) and other available programs to enhance riparian wetlands on private lands as a method of improving stream water quality.

C. Assure adequate monitoring of contaminant effects on and off Service lands within the Ark/Red.

D. Assure adequate treatment of any effluents generated on or leaving Service lands or facilities.

E. Protect/restore riparian habitat on Service lands as an aid to water quality improvement.

F. Demonstrate the use of constructed and restored wetlands for water quality improvement.

G. Establish upland vegetated buffers around important wetland habitats to reduce sedimentation and contaminant/nutrient inputs.

H. Determine water quality impacts of confined animal feeding operations (i.e., CAFO's) in the Ark/Red.

I. Work with State and Federal agencies to strengthen water quality standards, discharge limits and use designations of aquatic and wetland resources throughout the Ark/Red.

J. Participate in contaminant contingency planning and establish a Service/partner response team to protect and restore trust resources.

K. Identify principal water quality-related authorities and potential partners in the Ark/Red.

L. Identify and prioritize areas of the Arkansas/Red Rivers Ecosystem where water quality does not meet Federal and State water quality standards or otherwise impairs support for native flora and fauna.

M. Use Service statutory authorities, in conjunction with partners, to ensure that water quality standards are met to protect native flora and fauna.

N. Use Service authorities under Superfund to protect and restore native species and habitats in the Arkansas/Red Rivers Ecosystem, with emphasis on early involvement.

O. Use Service authorities under ESA, MBTA, Refuge Administration Act, Oil Pollution Act, and other statutes to ensure protection/restoration for native species and habitats affected by oil and gas operations.

Strategy 2. Maintain and improve groundwater quality for conservation of fish and wildlife resources.

A. Conduct or facilitate water quality monitoring of groundwater resources related to important fish and wildlife resources of the Ark/Red.

B. SPECIES AND HABITATS

OBJECTIVE 1. FOCUS SPECIES CONSERVATION AND RESTORATION

The Arkansas River and its tributaries drain portions of seven states. As a result of the large area contained within the ecosystem, an enormous number of species occupy its diverse habitats. Identified focus species groups include migratory birds, federally-listed, proposed, candidate, and species of concern, as well as interjurisdictional fisheries, and nonindigenous species. Some nonindigenous species are perceived as beneficial and desired while others are considered harmful. Even though this objective treats the needs of individual or groups of species, the majority of action items identified seek to conserve, restore or enhance the habitats upon which these species depend.

Strategy 1. Conserve and restore migratory birds

A. Increase aerial surveillance for enforcement of illegal take of migratory birds.

B. Continue and increase raptor electrocution enforcement.

C. Continue investigation of oilfield and chemical hazards causing migratory bird mortality.

D. Conduct and facilitate research related to diseases of migratory birds.

E. Improve important habitat on NWR's for migratory birds.

F. Ecological Services and Law Enforcement to cooperate to develop case to prosecute take of habitat (i.e., under MBTA).

G. Increase LE budget for migratory bird enforcement in the Ark/Red.

H. Conduct and facilitate investigations to identify neo-tropical bird species use of Ark/Red NWR's.

I. Use Service authorities under the Clean Water Act (Section 404), Fish and Wildlife Coordination Act, Migratory Bird Treaty Act, Endangered Species Act, and Bald and Golden Eagle Protection Act to ensure protection/restoration of migratory birds on and off Service lands.

Strategy 2. Conserve and restore interjurisdictional fisheries

A. Perform status surveys for listed, rare and declining aquatic interjurisdictional species.

B. Propagate and restore listed, rare and declining aquatic interjurisdictional species to their native ranges within the Ark/Red.

C. With partners, facilitate and conduct assessments of the aquatic resources in Ark/Red.

D. Conserve and restore interjurisdictional fishery resources on Service lands throughout the Ark/Red

Strategy 3. Conserve and recover listed, proposed, candidate, and species of concern.

A. Develop a species list with known ranges for all vertebrate species within the Arkansas/Red Rivers Ecosystem.

B. Increase emphasis on LE activities to protect essential wintering and nesting areas for endangered species.

C. Protect and restore the diversity and integrity of important aquatic, wetland and terrestrial habitats within the Ark/Red for listed, proposed, candidate, and species of concern.

D. Implement priority recovery tasks for all listed species within the Ark/Red.

E. Conduct and facilitate investigations related to prioritized species of concern.

F. Assess, develop and utilize capability at NFH's to hold and possibly propagate native mussels and other declining aquatic species.

G. Continue to develop MOU's with other agencies for conservation of species of concern.

H. Maintain ongoing surveys and monitoring efforts for listed, proposed, candidate, and species of concern.

I. Conduct baseline survey for 18 imperiled fish species in Ark/Red.

J. Prioritize recovery efforts among all listed, candidate and species of concern within the Ark/Red in order to efficiently manage limited funds and recovery opportunities.

K. Develop BMP's for listed, candidate and species of concern for use by Ark/Red landowners; facilitate HCP's and Safe Harbor agreements.

Strategy 4. Management of non-indigenous species

A. Monitor spread of zebra mussels throughout the Ark/Red.

B. Coordinate with State contacts on non-indigenous species issues and participate in existing multi-agency teams addressing non-indigenous species.

C. Provide information to the public explaining the hazards of introductions of non-indigenous species, and encourage control methods.

OBJECTIVE 2. CONSERVE AND RESTORE FOCUS HABITATS

The Ark/Red contains a tremendous variety of important habitats. Many are under threat due to human alterations and developments such as urban and agricultural expansions, forestry practices, and cave exploration and development. Habitats of significant importance which are under threat include wetlands, streams (including Big Rivers) and floodplain forests (including bottomland hardwoods), native grasslands, upland forests and cave systems.

Strategy 1. Conserve and restore wetland and bottomland hardwood habitats.

A. Establish an organized protection plan and funding base for important wetland and bottomland hardwood habitats throughout the Ark/Red.

B. Acquire wetlands/bottomland hardwoods with Duck Stamp/LWCF on suitable sites throughout the Ark/Red.

C. Restore wetlands/bottomland hardwoods on suitable sites throughout the Ark/Red, on and off Service lands.

D. Monitor representative aquatic and wetland habitats for data base development.

E. Construct moist soil units on NWR's throughout the Ark/Red.

F. Acquire and utilize tree planters and related equipment at field stations throughout the Ark/Red.

G. Cooperate with agency partners and landowners in implementing forestry BMP's, especially in bottomland hardwood habitat.

H. Encourage forest product companies to insure reforestation of private

lands following timber harvest, especially in bottomland hardwoods.

I. With partners, accomplish wetland delineation per national Memorandum of Understanding among DOI, DOD, USDA, and EPA.

J. Identify and prioritize bottomland hardwood and wetland habitats in the Arkansas/Red Rivers Ecosystem.

K. Utilize the PWP to accomplish habitat restoration projects for priority areas, habitats, and target species.

L. Meet Service responsibilities for ensuring mitigation in the Arkansas/Red Rivers Ecosystem to reduce habitat and species impacts caused by human development. Pursue innovative partnership opportunities to complete priority mitigation projects, including use of the mitigation banking concept.

M. Complete Congressionally mandated management planning and data collection on NWR's throughout the Ark/Red.

N. Conduct and facilitate investigations designed to identify optimum management procedures for bottomland hardwoods and wetlands throughout the Ark/Red.

Strategy 2. Conserve and restore Big River habitats.

A. Conserve and restore the aquatic diversity of Ark/Red Big Rivers.

B. Conserve and restore sandbar habitat in Ark/Red Big Rivers.

C. Conserve and restore backwater and oxbow habitats associated with Ark/Red Big Rivers.

Strategy 3. Conserve and restore prairie stream and riparian habitats.

A. Conserve and restore the aquatic diversity of prairie stream and riparian habitats.

Strategy 4. Conserve cave systems.

A. Control human access to important NWR and other public cave habitats throughout the Ark/Red.

B. Work with partners via PWP to cooperatively gate caves on private lands to protect cave habitat and species.

Strategy 5. Conserve and restore native grassland habitats.

A. Conduct and facilitate inventories, studies, and assessments on prairie species (i.e., flora and fauna) within Ark/Red.

B. Determine cause and effect of decline of prairie species (emphasis on migratory birds and species of concern).

C. Establish cooperative partnerships to conserve and restore native grasslands and savannahs on private lands throughout the Ark/Red.

D. Conserve and restore NWR native grasslands throughout the ARRE.

E. Conduct needed research activities on NWR's relative to management of native grassland species and systems.

F. Develop management plans to protect shortgrass prairie.

Strategy 6. Conserve and restore native upland forest and savannah habitats.

A. Cooperate with agency partners and landowners in implementing forestry BMP's on private lands

C. QUALITY OF HUMAN LIFE

OBJECTIVE 1. INCREASE PUBLIC OUTREACH EFFORTS RELATIVE TO SERVICE PROGRAMS

Conservation of our wildlife heritage can only be accomplished by increasing public knowledge of the related problems and opportunities through environmental education, exhibits, pamphlets, and other means.

Strategy 1. Increase public awareness of relationship between fish and wildlife resource conservation and quality of human life.

A. Establish an ecosystem-wide outreach position for the Ark/Red.

B. In consultation with partners, develop a cross-program, ecosystem-wide public outreach strategy addressing major habitat-related problems, threats and opportunities.

C. Increase staffing for outreach personnel at Ark/Red field stations.

D. Develop a media symbol for the Ark/Red.

E. Restore and enhance wetlands on private lands and establish outdoor classrooms throughout the Ark/Red.

F. Develop an ecosystem-specific vision statement for the Ark/Red associated with the media symbol, logo, displays and other outreach material.

G. Develop an Ark/Red newsletter.

H. Develop traveling display on Biodiversity and general Biological Information concerning the Ark/Red.

I. Expand the existing database for media contacts to include all of the Ark/Red.

J. Develop posters: Plight of the Prairies - FY97, Bottomland Hardwoods - FY98.

K. Develop public service announcements (PSA) on Biodiversity and Endangered Species in Ark/Red. Fund airtime (television and radio) for PSA's. Increase print media distribution (newspapers, magazines, etc.) for PSA's.

L. Provide information booths at International Airports within the Ark/Red on biodiversity and import/export regulations.

M. Develop/purchase school book covers promoting the ecosystem approach to managing fish and wildlife resources.

N. Establish study/outreach centers at Ark/Red NWR's and NFH's for focus species and habitats.

O. Support National Fishing Week and other outreach efforts by sponsoring annual fishing clinics, derbies, and develop programs for target groups.

P. Coordinate with the State fish and wildlife resource agencies in development of environmental education center and other outreach facilities.

Q. Construct and staff needed visitor centers, environmental education centers, and other interpretive resources at Ark/Red NFH's and NWR's.

R. Develop habitat and species-specific endangered species regulations information for distribution to private landowners within the Ark/Red.

S. Purchase biodiversity display from Smithsonian Institution.

T. Explore possibility of obtaining educational media relating to biodiversity from television science series Bill Nye - "The Science Guy".

U. Develop demonstration area (possibly at a NWR) for "Backyard Habitat" plantings.

V. Develop curriculum/classroom projects relating to Ark/Red issues.

W. Develop an identification brochure for selected Ark/Red species to increase public awareness, and as an aid to increase monitoring efforts, and to help establish status and trends.

X. Encourage resource agencies to conduct environmental education programs in the public schools.

Y. Encourage corporate support of environmental education programs in the public schools.

Z. Identify partners and resources available to cooperatively educate target audiences (i.e., "publics") in the Ark/Red.

AA. Develop professional outreach efforts to inform the general public and potential partners of ecosystem management principles and priorities (e.g. partnerships, bottom-up approach, ongoing and long-term effort) in the Service.

BB. Increase public awareness of hunting and fish opportunities as essential elements of good ecosystem management.

CC. Increase public awareness of non-traditional resource opportunities as valued inputs to ecosystem management.

DD. Increase public awareness of people as an important component and an important concern in the Arkansas/Red Rivers Ecosystem.

EE. Develop educational programs related to urban wildlife-human conflict awareness and resolution.

OBJECTIVE 2. IMPROVE OUTDOOR RECREATIONAL OPPORTUNITIES

There is an increased demand for outdoor recreational activities with the expanding human population in the Ark-Red Ecosystem. Popular activities include bird watching, fishing, hiking, and hunting, among others.

Strategy 1. Provide recreational opportunities to increase public enjoyment and awareness of relationships between fish and wildlife resource conservation and quality of human life.

A. Assist in the management of recreational fishes and related habitats (on federal and trust lands) within the Ark/Red.

B. Develop recreation plans for Ark/Red NWR's and NFH's, where appropriate.

C. Encourage other agencies, such as the Corps of Engineers and State parks departments, to emphasize fish and wildlife resource-related outdoor recreation on lands under their jurisdiction.

D. Identify partners involved in traditional and non-traditional recreational programs within the Arkansas/Red Rivers Ecosystem.

E. Identify partners and areas where sustainable recreational opportunities can be enhanced without impacts on natural resources in the Arkansas/Red Rivers Ecosystem.

F. Maintain traditional hunting and fishing programs (e.g., Pathways to Fishing, National Recreational Fishing Policy, Refuge hunting and fishing) that provide direct public access and enjoyment of natural resources and promote public awareness and participation in ecosystem concepts.

G. Develop non-traditional fish and wildlife management programs that provide direct public access and enjoyment of natural resources and promote public awareness and participation in ecosystem concepts/programs.

H. Promote urban and youth fish and wildlife programs to increase ecosystem awareness and participation.

SUMMARY

This Arkansas/Red Rivers Ecosystem Plan was designed as a communication tool to alert decision makers within the Service, as well as partners, to the resources that occur here, and the priorities established by the Ecosystem Team for management of Trust resources. The Plan will be updated periodically as resource management needs and opportunities evolve. The key to successful implementation of the Plan is involvement of partners from Federal, State and local governments, and the private sector, especially landowners. To this end, the Ark/Red Team dedicates this Plan to the Trust resources and people we serve.

APPENDIX H

WASHITA/OPTIMA NWR COMPLEX

KEY LEGISLATION AND POLICIES

Key Legislation and Policies

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

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

Migratory Bird Conservation Act (1929): Established procedures for acquisition by purchase, rental, or gift of areas approved by the Migratory Bird Conservation Commission.

Migratory Bird Hunting Stamp Act (1934): Created the Federal Waterfowl Conservation Stamp, or "duck stamp." All hunters of migratory waterfowl were required to purchase stamp, and most of the revenue was set aside as the Migratory Bird Conservation Fund. This fund is used exclusively to purchase waterfowl habitat to establish or enlarge inviolate sanctuaries for waterfowl. In 1958 the Duck Stamp Act was amended to allow hunting of migratory birds on up to 40 percent of lands acquired for National Wildlife Refuges using the Migratory Bird Conservation Fund.

Fish and Wildlife Act (1956): Established a comprehensive national fish and wildlife policy and broadened the authority for acquisition and development of refuges.

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

Refuge Recreation Act (1962): Opened refuges to public recreation use when compatible with the refuge's primary purposes and when sufficient funds are available to manage recreational use.

Land and Water Conservation Fund Act (1965): Established a process whereby the receipts from the sale of surplus Federal land, outer continental shelf oil and gas sales, and other sources would be directed to Federal land acquisition under several authorities.

National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. 668dd-668ee. (Refuge Administration Act): Defined the National Wildlife Refuge System and authorizes the Secretary to permit any use of a refuge provided such use is compatible with the major purposes for which the refuge was established. The Refuge Improvement Act clearly defined a unifying mission for the Refuge System; established the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation, wildlife photography, environmental education and interpretation); established a formal process for determining compatibility; established the responsibilities of the Secretary of Interior for managing and protecting the System; and required 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.

National Historic Preservation Act (1966) as amended: Established the policy that the Federal Government is to provide leadership in the preservation of the nation's prehistoric and historic resources.

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

National Environmental Policy Act (1969): Established the principle that Federal agencies consider and disclose the environmental impacts their actions. Required preparation of an Environmental Impact Statement for any major Federal action significantly affecting the quality of the human environment.

Endangered Species Act (1973): Established criteria for listing rare or declining species and federally threatened or endangered. Required all Federal agencies to carry out programs for the conservation of endangered and threatened species.

Rehabilitation Act (1973): Required programmatic accessibility in addition to physical accessibility for all facilities and programs funded by the Federal government to ensure that anybody can participate in any program.

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

Clean Water Act (1977): Required consultation with the Corps of Engineers (404 permits) for major wetland modifications.

Executive Order 11988 (1977): Created a responsibility for each Federal agency to provide leadership and take action to reduce the risk of flood loss and minimize the impact of floods on human safety, and preserve the natural and beneficial values served by the floodplains.

American Indian Religious Freedom Act (1978): Directed 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.

Archaeological Resources Protection Act (1979) as amended: Established protection of archaeological resources from unauthorized removal or destruction and required Federal managers to develop plans and schedules to locate archaeological resources.

Emergency Wetlands Resources Act (1986): The purpose of the Act was "To promote the conservation of migratory waterfowl and to offset or prevent the serious loss of wetlands by the acquisition of wetlands and other essential habitat, and for other purposes."

Federal Noxious Weed Act (1990): Required 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.

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

Americans With Disabilities Act (1992): Prohibited discrimination in public accommodations and services.

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

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

APPENDIX I

WASHITA/OPTIMA NWR COMPLEX

COOPERATIVE AGREEMENTS

WASHITA BASIN PROJECT
OKLAHOMA

TEMPORARY WATER SERVICE CONTRACT

Between The

FOSS RESERVOIR MASTER CONSERVANCY DISTRICT

And The

Washita National Wildlife Refuge

THIS CONTRACT, made this 8th day of April, 2002, between the FOSS RESERVOIR MASTER CONSERVANCY DISTRICT, a master conservancy district duly created and existing under the laws of the State of Oklahoma, hereinafter styled the "District" and the Washita National Wildlife Refuge, U.S. Fish and Wildlife Service, Department of Interior, an agency of the federal government with a business address of Rt. 1 Box 68, Butler, Oklahoma 73625, herein styled the "Service."

WITNESSETH THAT:

WHEREAS, the District has contracted with the United States for repayment of the costs of constructing the Foss Division of the Washita River Basin Project, Oklahoma, which project is intended to provide a municipal and industrial water supply to water users served by the District; and

WHEREAS, the Service desires to obtain a temporary water supply from the project, in addition to an existing vested water right to 300 acre feet of water, for use for wetlands enhancement at various locations on lands owned by the United States Government and managed as the Washita National Wildlife Refuge adjacent to Foss Reservoir; and

WHEREAS, execution of this contract for the sale of water for wildlife use is consistent with project purposes; and

WHEREAS, Service operations on project lands shall be in accordance with the provisions set forth in this contract and shall be compatible with the requirements of the United States for operation and maintenance of the project; and

WHEREAS, all activities by the Service related to installation, operation, and removal of water delivery facilities shall comply with the National Environmental Policy Act (NEPA).

NOW THEREFORE, in consideration of the mutual and dependent covenants herein contained, it is mutually agreed between the parties hereto as follows:

1. The District agrees to make available to the Service, up to 1000 acre feet of water, in addition to 300 acre feet provided by the existing water right, during the term of this contract at no cost.

2. The District may conduct onsite inspections of all operations to assure compliance with the provisions of this contract as well as all contractual operating requirements of the United States.

3. This contract may be terminated by either party upon written notice to the other party submitted 30 days prior to the effective date of the termination. Violation of the covenants herein provided shall be cause for cancellation of the contract by either party; Provided, That notice of such cancellation is submitted in writing 30 days prior to the date of cancellation.

4. The Service shall provide all equipment and facilities required to deliver the water supply and shall be fully responsible for installing, operating, and subsequently removing all such items. Additionally, the Service agrees to assume full liability for any damages, injury, or other losses associated with these water deliveries.

5. The Service agrees to provide a Water Use Report each year to the District.

6. The Service agrees that this contract, or any part of or interest therein, shall not be further assigned without the prior written approval of the District.

7. The use of water under this contract shall not interfere with domestic or existing appropriative uses. The amount of water authorized for use by this contract may be reduced or withdrawn altogether if drought, increased usage by existing appropriative users, or other conditions limit water availability. Any decrease in the amount of water available shall be communicated in writing to the Service by the District.

8. It is mutually agreed among the parties hereto that if at any time after execution of the contract it becomes necessary for one party to give notice to the other party, such notice shall be in writing, signed by the party authorized to give such notice, and such notice shall be deposited in the registered or certified mail, return receipt requested, postage prepaid, and

(a) If intended for the District, addressed to:
Mr. Charles Touchstone, Manager
Foss Reservoir Master Conservancy District
HC 66 Box 102
Foss, Oklahoma 73647-9616

(b) If intended for the Service, address to:
Mr. David Maple, Refuge Manager
Washita National Wildlife Refuge
Rt. 1 Box 68
Butler, OK 73625

9. The terms of this contract shall begin upon the date herein first written and continue for a period of 5 years or until otherwise terminated or canceled under the provisions of Article 3 contained herein or extended through renegotiation.

FOSS RESERVOIR MASTER CONSERVANCY DISTRICT

By _____
(President)

Date 4-8-02

Washita National Wildlife Refuge

By _____

Title Refuge Manager

Date 4/4/02

APPROVED BY:

_____
Area Manager
Oklahoma-Texas Area Office

4/24/2002
Date

LOCAL INTERANGENCY AGREEMENT
BETWEEN
CUSTER COUNTY SHERIFF'S OFFICE
AND THE
U.S. FISH AND WILDLIFE SERVICE
NATIONAL WILDLIFE REFUGE SYSTEM

I. Purpose

This Interagency Agreement prescribes the procedures and guidelines for law enforcement assistance between the Custer County Sheriffs Office (County SO), Oklahoma and the United States Department of Interior (USDI), U.S. Fish and Wildlife Service (USFWS) National Wildlife Refuge System (NWRS), pursuant to the terms of the following authorities.

II. Authority

This agreement is made pursuant to 16 U.S.C. Section 742l(b) and Director's Order No.155 the "National Wildlife Refuge System Law Enforcement Program Reforms" of 2003 which encourages cooperation between the Service, State, and other law enforcement agencies.

III. Statement of Mutual Interest and Mutual Benefits

The United States Congress has given the Secretary of the Interior the authority to enforce certain laws dealing with public protection and conservation of fish, wildlife, and other natural resources and this authority has been delegated to the Director of the US Fish & Wildlife Service and to certain qualified individuals.

The Secretary has also determined that in cases where a specific need for law enforcement assistance and investigative support has been identified or where a law enforcement emergency or a violation in progress exists, it shall be mutually beneficial, economical, and advantageous to the public interest to have law enforcement cooperative assistance agreements in place.

The Service has a genuine interest in public safety and recognizes the continued need to better working relationships with neighboring law enforcement agencies through cooperative assistance agreements.

The Service also recognizes the unique geographical relationship created by refuge's size and boundaries and the potential for emergency law enforcement incidents to escalate into or overlap jurisdictional lines.

The Service and the Custer County SO have determined that the providing of specified law enforcement aid and assistance across jurisdictional lines will increase their mutual ability to preserve the safety and welfare of law enforcement personnel and all citizens and the same public officials desire to document existing traditional cooperative assistance or verbal agreements.

IV. Definitions

A. **Sheriff, Custer County SO**. Chief law enforcement officer of the Custer County Sheriffs Office.

B. **Regional Chief, NWRS**. The Chief of the National Wildlife Refuge System for the Southwest Region USFWS.

C. **Regional Chief, Office of Refuge Law Enforcement (ORLE)**. The Chief law enforcement officer for the NWRS, Southwest Region USFWS.

D. **Refuge Manager, NWRS.** The project leader responsible for management of a National Wildlife Refuge.

E. **Zone Officer, ORLE.** Provides law enforcement support and oversight for Refuges within their Zone.

F. **Refuge Officer, USFWS**. A commissioned federal law enforcement officer of the NWRS.

G. **Initial action**. Law enforcement action taken, including but not limited to detention and/or arrest in response to violation(s) in progress until relieved by the responsible agency.

H. **Law enforcement officer**. Commissioned law enforcement officers of the USFWS and Custer County SO.

I. **Violations in progress**. Violations that are encountered on lands and waters within Custer County, Oklahoma that are incidental to the normal duties of the cross-designated law enforcement officer.

V. Procedures

Therefore, the parties hereto, in consideration of the cooperative provisions and conditions herein contained, promise and agree with each other as follows:

A. The parties of this agreement will reciprocally provide emergency assistance, when there is a clear and present danger to human life, including natural disasters, and the responding agency does not have the resources immediately at hand to bring the incident under control. Request can be initiated by an officer's perception of an urgent need to assist or by the requesting agency directly to authorized personnel of the responding agency via radio, telephone, or in person.

B. Under routine conditions not considered an emergency, Service personnel may routinely render aid and assistance to local agencies. Such aid and assistance will be directed toward the safety of the public, officers, or emergency personnel and will only extend to ensuring their safety.

C. Depending on the nature of the offense, in most instances the requesting agency will be in charge of the incident scene. Responding units will render assistance as requested by the requesting agency.

D. Each law enforcement agency will normally have sole responsibility for traffic direction and control within its own jurisdiction. However, when incidents arise in either agency's jurisdiction, the responding agency, within its capabilities, will assist the requesting agency in traffic direction and control. Enforcement on refuge boundary roads can be performed by the SO, State, and/or Refuge Officers.

E. This MOA authorizes Refuge Officers and Deputy Sheriff's of Custer County SO to take initial action of major crimes in progress occurring in their presence when the agency of jurisdiction does not have the resources immediately at hand. The purpose of this initial action is to ensure the public safety and to prevent destruction of property and shall be for the purposes of referral to the agency of jurisdiction.

F. For violations occurring within the Washita National Wildlife Refuge where the Custer County SO has jurisdiction, the following actions will take place.

1. The first law enforcement agency on the scene will secure the incident scene and, if assistance is needed, immediately notify the other agency.

2. If the offense committed is a petty offense or misdemeanor, the witnessing agency will handle the incident prosecution. If two agencies agree at the scene the Service should prosecute, the witnessing agent/officer will be required to present court testimony at the time of the trial; or, if the two agencies agree at the scene the Custer County SO should prosecute, the witnessing Refuge Officer will be required to present court testimony at the time of trial.

3. If the crime committed is a felony, the Service or appropriate Federal Agency will reserve its right to exercise primary jurisdiction.

4. If the correspondent prosecutes under State Statute, the case will be filed in State court.

G. Custer County SO or the State Police will normally have the responsibility for investigating motor vehicle accidents occurring on refuge lands within their jurisdiction. If a Refuge Officer is the first law enforcement officer on the scene of a motor vehicle accident on the Refuge, they will immediately request assistance from the Custer County SO or the State Police and control the scene until they arrive to take over the investigation.

H. In the interest of public safety, the Service and Custer County SO recognizes the threat that driving under the influence of alcohol or controlled substances poses to the general public and visitors of the National Wildlife Refuge System. This MOA authorizes Refuge Officers to take initial action and effect the detention of suspected DUI violators encountered off refuge who pose an obvious threat to the safety of the general public. The purpose of this detention is for the safety of the public and referral to the agency of jurisdiction.

I. This MOA authorizes Refuge Officers to effect the detention of persons under local warrants on Service lands and authorizes Sheriff Deputies of Custer County SO to effect the detention of persons under warrants of the National Wildlife Refuge System. Arrangements for all administrative actions for executed warrants by either agency will be the responsibility of the initiating agency.

J. Each agency will provide the proper radio frequencies by which to communicate with each other.

VI. Terms of Agreement

This agreement shall be effective from the date of execution and shall remain in effect until terminated with a 60-day written notice to either party from the other party. This agreement may be modified or amended upon written notice to either party from the other party and written concurrence of the other party.

VII. Property Management and Disposition

No direct funding is required by this agreement and no property, real or personal shall be acquired, managed or disposed of hereto. The law enforcement agency or each party will maintain its own personnel equipment and each will be responsible for all costs for emergency or routine assistance if it occurs as a result of an incident.

VIII. Principal Contacts

U.S. Fish and Wildlife Service

David Maple	Refuge Manager
(580)664-2205	Washita NWR
	Rt. 1, Box 68
	Butler, OK 73625

Jon Storey	Zone Officer, Office of Refuge Law Enforcement
(580)664-3990	Rt. 1, Box 68
	Butler, OK 73625

Custer County Sheriff's Office

Mike Burgess	Sheriff
(580)323-1616	P.O. Box 40
	Arapaho, OK 73620

IX. Standard Provisions

Neither party shall be liable to the other for any loss, damage, personal injury or death occurring as a consequence in the performance of this agreement, except as provided herein.

During the performance of this agreement, the participants agree to abide by the terms of the Executive Order 11246 on non-discrimination and will not discriminate against any person because of race, color, religion, sex, or national origin.

Notwithstanding any provision herein, nothing shall commit the Service to incurring monetary obligations for the purposes of this agreement, except to the extent those funds are provided in Congressional Appropriation Acts. The provisions contained herein constitute the entire agreement between the parties hereto.

X. Cross-training and Reporting

Each party's officers/agents will follow their respective agencies training requirements, use of force policy, and reporting requirements.

During any approved training such as, but not limited to, firearms re-qualifications, each party will be responsible for its own personnel.

All law enforcement actions taken or incidents detected by law enforcement personnel on areas administered by the other agency will be reported to that agency in a timely manner. Necessary forms/formats will be provided by the requesting agency.

XI. Approvals

DEPARTMENT OF INTERIOR
U.S. FISH AND WILDLIFE SERVICE, SOUTHWEST REGION
NATIONAL WILDLIFE REFUGE SYSTEM

Approved by:

David Maple, Refuge Manager, Washita NWR (Acting)

Brian Lockwood **Date** 6/7/05

Approved by:

Dom Ciccone, Regional Chief, National Wildlife Refuge System

Dom Ciccone **Date** 6/22/05

Regional Director

Larry McBell Acting Date 6/28/05

CUSTER COUNTY SHERIFF'S OFFICE
CUSTER COUNTY, OKLAHOMA

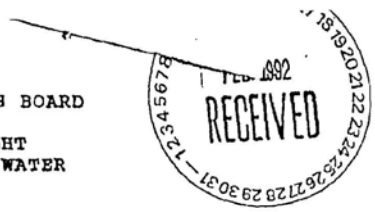
Approved by:

Mike Burgess, Custer County Sheriff

Mike Burgess **Date** 6-9-05

OKLAHOMA WATER RESOURCES BOARD

*AMENDED VESTED RIGHT
TO APPROPRIATE STREAM WATER



Stream System: Washita River Number: 1-8-4 County: Custer

Application No. 51-127 Date of Filing 2-9-51 Date Approved 10-9-90

THIS TO CERTIFY that the OKLAHOMA WATER RESOURCES BOARD has amended the above listed water right in the name of (Foss) Reservoir Master Conservancy District whose address is Star Route, Box 102, Foss, OK 73647. The appropriation as amended is in the total amount of *18,000 acre-feet of water per calendar year for the purpose(s) of use and location(s) as follows: *17,350 acre-feet for Municipal, Industrial, Recreation, Fish, Wildlife & Irrigation ; *350 acre-feet for Commercial Sale of Water for Enhanced Oil Recovery (Use by Cities of Bessie, Clinton, New Cordell, Hobart, the Foss Recreational Areas, and any existing or proposed entities taking water from the reservoir.) & *300 acre-feet for Marsh areas to provide habitat for migrating and wintering waterfowl and other wetland species to be pumped from Foss Reservoir into the marsh areas.

The water is to be diverted from Foss Reservoir on mainstem Washita River at a point located in the SW¼ of the SW¼ of the SW¼ in Section 36, Twp. 13N, Rge. 19WIM, Custer County.

THE (WATER RIGHT IS) subject to the following terms, conditions and limitations:

1. The use of water under this permit shall not interfere with domestic or existing appropriative uses.

2. A WATER USE REPORT must be filed each year on forms furnished by the Board. Willful failure to complete and return the report may be considered by the Board as nonuse of water under this permit.

3. The annual percentage of total water authorized must be beneficially used in a calendar year within the times in the Schedule of Use shown below to retain the total amount of the water right.

4. Acceptance of this amended Vested Water Right by applicant/vested right holder shall be an acknowledgement and agreement that applicant/vested right holder will comply with all the terms, conditions and limitations embodied in this water right and all applicable laws of the State of Oklahoma and Rules, Regulations and Modes of Procedure of the Board.

SCHEDULE OF USE: 1995 - 47% = 8,460 A.F.; 2005 - 58% = 10,440 A.F.; 2015 - 69% = 12,420 A.F.; 2025 - 80% = 14,400 A.F.; 2040 - 100% = 18,000 A.F.

DATED this 11TH day of February, 1992.

OKLAHOMA WATER RESOURCES BOARD

Patty Eaton

Patricia P. Eaton, Executive Director

COOPERATIVE AGREEMENT

BETWEEN THE

BUREAU OF RECLAMATION

AND THE

BUREAU OF SPORT FISHERIES AND WILDLIFE

THIS COOPERATIVE AGREEMENT made and entered into this 15th day of April, 1961, between the Bureau of Reclamation and the Bureau of Sport Fisheries and Wildlife, in pursuance of the Fish and Wildlife Coordination Act, (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and of the GENERAL PLAN approved on APR 15 1961 by the Secretary of the Interior and the Chairman, Oklahoma Wildlife Conservation Commission.

WITNESSETH

Administration of the land and water area as shown on the attached Exhibit "A" and made a part hereof is transferred from the Bureau of Reclamation to the Bureau of Sport Fisheries and Wildlife for the conservation, maintenance and development of the area for public use in accordance with a Bureau of Sport Fisheries and Wildlife plan of operations approved by the Bureau of Reclamation, subject to:

1. The officers, employees, agents, and contractors of the Bureau of Reclamation and of the Foss Reservoir Master Conservancy District, will at all times and places have the right of full ingress, passage over, and egress from the lands described in Exhibit "A" for the purpose

of carrying on operations including the operation and maintenance of reclamation works on the lands shown on Exhibit "A", including but not limited to the right to construct and maintain adequate channels into and through the reservoir lands, and the right to cooperate with the Bureau of Sport Fisheries and Wildlife in the control of vegetation in the sediment deposition areas indicated on Exhibit "A".

2. To insure that the management of the area described in Exhibit "A" for wildlife by the Bureau of Sport Fisheries and Wildlife is given full consideration in the operation of the project, the Bureau of Reclamation shall consult with the Bureau of Sport Fisheries and Wildlife in the development of rules and regulations to be prescribed by the Secretary of the Interior in accordance with Article 16B of the contract between the United States and the Foss Reservoir Master Conservancy District (Contract No. AFS 011758 14-06-500-322 dated February 14, 1958) pertaining to the operation of the Foss Reservoir by the District.

3. No use of water will be effected on the lands described in Exhibit "A" without consent of the Regional Director of Region 5 of the Bureau of Reclamation; such consent may be obtained by submission of plans of development for approval of said Regional Director. The Bureau of Sport Fisheries and Wildlife agrees to keep sediment desposition areas indicated on Exhibit "A" free from excessive vegetation to extent desirable to minimize water losses.

4. The Bureau of Sport Fisheries and Wildlife shall administer, develop, manage, and operate the said land and water areas shown on Exhibit "A" in such manner as not to interfere with operation of the dam and reservoir for the primary purposes of the project.

5. The Bureau of Sport Fisheries and Wildlife shall have responsibility for regulating public use and access on the wildlife refuge as shown in Exhibit "A" as appropriate to prevent interferance of such use with wildlife management.

6. The Bureau of Sport Fisheries and Wildlife agrees to post the national wildlife refuge area shown on Exhibit "A".

7. For other than the primary purposes of the project, any easements, licenses, permits or right-of-way uses which may be requested and allowed shall be granted by the Bureau of Reclamation, upon clearance and approval by the Bureau of Sport Fisheries and Wildlife and subject to the stipulations of those agencies.

IN WITNESS WHEREOF, the parties hereto have caused this cooperative agreement to be executed on the day and year first above written.

BUREAU OF RECLAMATION

By _____
Acting Commissioner

BUREAU OF SPORT FISHERIES & WILDLIFE

By _____
Acting Director

Attachment

APPROVED: APR 15 1961

_____
Secretary of the Interior

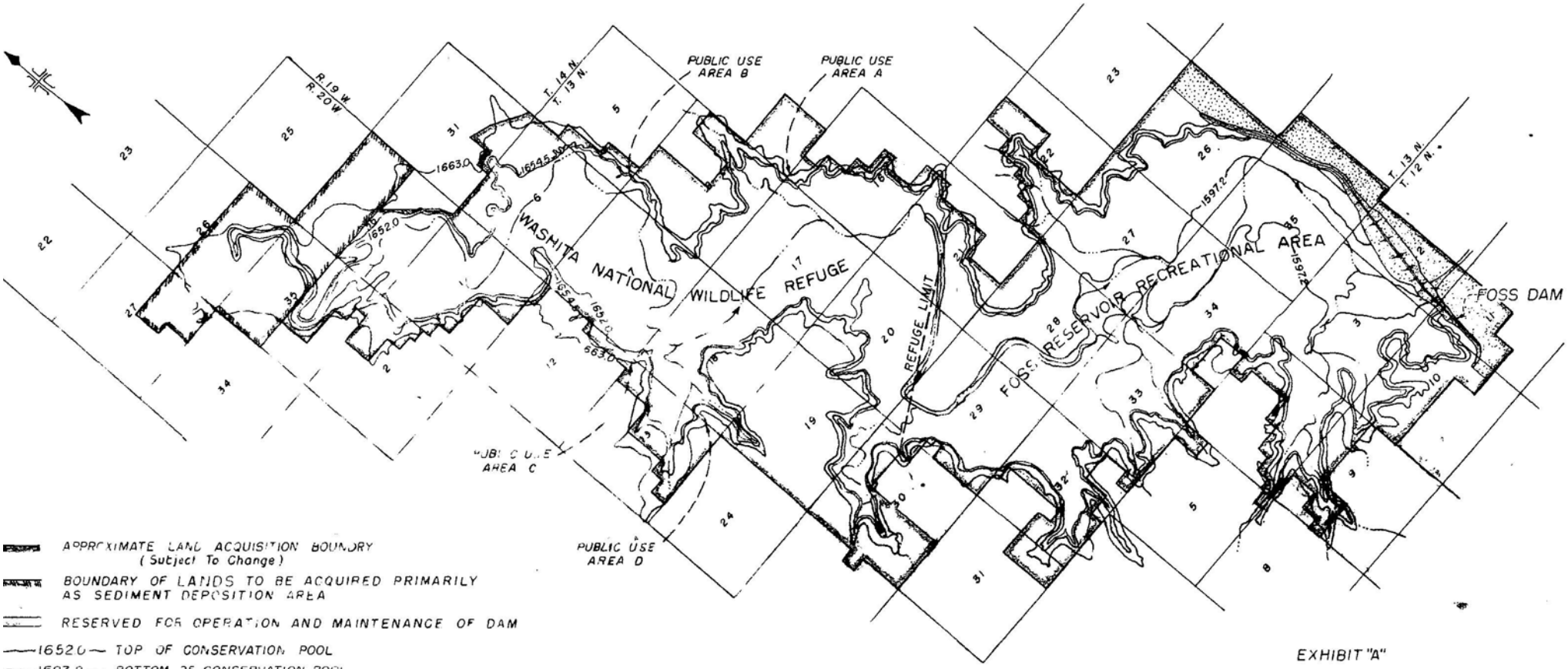


EXHIBIT "A"

GENERAL PLAN

SPORT FISHERIES AND WILDLIFE CONSERVATION MANAGEMENT AREAS

FOSS RESERVOIR

WASHITA BASIN PROJECT, OKLA.

854-522-118

REV. 2-16-61
REV. 6-29-60

United States Department of the Interior

FISH AND WILDLIFE SERVICE
WASHINGTON, D.C. 20240

ADDRESS ONLY THE DIRECTOR,
FISH AND WILDLIFE SERVICE

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In Reply Refer To:
FWS/RF

Memorandum

To: Service Directorate

From: Director

Subject: Revised Bureau of Land Management (BLM) - FWS Memorandum of Understanding

Attached is a copy of the revised Memorandum of Understanding (MOU) between the BLM and FWS. I and the Director of BLM have approved the revised document which updates the working relationships between BLM and FWS.

The MOU emphasizes interagency planning and coordination in environmental analysis, research programs, and key resource management areas. In addition to the general updating, several existing sections were combined and new sections on land exchanges, law enforcement, and pipelines/rights-of-way have been added.

With the integrated procedures provided, this MOU can facilitate the cooperative resource management efforts of both agencies. You should reproduce and transmit the MOU to appropriate managers and field stations for implementation.

Frank Dunkle

Attachment

RECEIVED
REFUGES
JAN 13 '87

MEMORANDUM OF UNDERSTANDING
Between the
BUREAU OF LAND MANAGEMENT AND FISH AND WILDLIFE SERVICE

Contents

MEMORANDUM OF UNDERSTANDING
Between the
BUREAU OF LAND MANAGEMENT and FISH AND WILDLIFE SERVICE

I. PURPOSE

The purpose of this agreement is to promote harmonious and effective cooperative relationships between the Bureau of Land Management (BLM) and the Fish and Wildlife Service (FWS) in resource planning and management activities in a manner that recognizes existing cooperative relationships with the States, consistent with the statutory authorities and responsibilities of the two Agencies.

II. AUTHORITY

This agreement is made under authority of the Economy Act of June 20, 1932 (31 U.S.C. 686, 6866), Federal Land Policy and Management Act (43 U.S.C 1701-1782), Fish and Wildlife Coordination Act (16 U.S.C. 661-661c), Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j), and Sikes Act (16 U.S.C. 670a-670o).

III. RESPONSIBILITIES

The key to achieving the purpose of this agreement is clear definition of BLM and FWS roles and responsibilities within respective statutory authorities. Broad responsibilities are defined below. Specific relationships are set forth in subsequent sections of this agreement.

A. The BLM has the statutory responsibility for cadastral survey, inventory, land use planning, and multiple-use management of the public lands (those lands from the public domain not appropriated for other Federal uses) and public land resources, including fish and wildlife. BLM is also required to assure that fish and wildlife resources are effectively considered in all stages of its land management programs and activities. In connection with this responsibility, BLM must have the capability to effectively inventory, manage, and protect fish and wildlife habitat.

B. The FWS has principal statutory responsibility and authority for migratory birds, threatened and endangered (T/E) species, anadromous fish, certain marine mammals and international resources within the continental United States, and all fish and wildlife on lands under FWS control and as described in the Fish and Wildlife Act of 1956 (16 U.S.C. 742(a)-754) and the National Wildlife Refuge System Administration Act of 1966, as amended. FWS also has responsibility to conduct analyses of impacts (including contaminants) on fish and wildlife resources and to recommend mitigation for Federal or federally approved water-related projects.

C. FWS and BLM have general responsibilities to conduct research and to compile information on the status of fish, wildlife, and plant resources and those factors affecting them in their respective areas of responsibility. FWS assessments for wildlife and vegetation conditions and trends may at times extend to areas within the public lands under BLM administration in response to statutory, Presidential, or Secretarial direction. Likewise, information gathering and research by BLM may extend to areas administered by FWS.

IV. COORDINATION

A. Field Coordination: Frequent informal discussion of matters of mutual concern is to be encouraged at all levels. Where disagreements arise, they should be expressed through the levels of authority of the two Agencies, beginning at the lowest appropriate field level.

1. The BLM State Offices and the FWS Regional Offices or their delegated field offices will be the primary offices through which field coordination will take place. The Endangered Species staff of FWS offices should be contacted on all matters regarding listed, proposed, or candidate T/E species. Each Agency is responsible for ensuring that appropriate offices of its organization are involved whenever appropriate.

2. On matters of mutual interest, the FWS Regional Director or the BLM State Director will determine which of their respective offices should be the focal point for coordination, including referral to other field organizational units. The Directors or Leaders of these field units will apprise FWS Regional Directors and BLM State Directors of planned or ongoing studies, projects, and activities.

B. Washington Office (WO) Coordination Committee: Close coordination is also essential at the WO level. This agreement re-establishes the BLM-FWS Interagency Committee for Program Coordination with the following responsibilities:

1. To coordinate the full range of related programs between the two Agencies.

2. To arrange for cooperation, support, and standards in the operational conduct of programs relating to fish and wildlife resources.

3. To provide for exchange of data, information, findings, and services of mutual concern.

The Committee will have the authority to make decisions within its areas of responsibility where the cochairpersons of both Agencies agree. The Committee will have the authority to establish working groups on specific proposals or problem areas, as required.

The Committee will be jointly chaired by the Deputy Director, BLM, and the Deputy Director, FWS. The Committee will be made up preferably with officials at the policy level concerned with the activities involved. It will meet as needed, but at least once every year, at the call of the cochairpersons.

C. Meetings: There shall be, as a minimum, annual coordination meetings between State Offices and appropriate FWS Regional Offices, and such other offices as deemed appropriate, timed to coincide with the budget cycle and to review program matters and planning activities, including schedules of concern to both Agencies for the coming year. WO level meetings shall be held by the BLM/FWS Coordinating Committee. Inter-office communication is encouraged at all organizational levels to keep each Agency informed of items of mutual interest.

D. Written Communication: When the responsible official of either Agency solicits from the other Agency advice/recommendations on subjects related to this agreement, 30 days, unless specified otherwise, will be afforded for reply. If no response is received by the responsible official within the specified time period, the requesting Agency will assume that the other either concurs or has no comments to offer.

E. Supplemental Agreements: BLM State Offices and FWS Regional Offices or other appropriate organizational units may enter into supplemental agreements where needed to specify interrelationships in detail or for specific project-type activities. Such agreements must be within the policy parameters of this agreement and will stress coordination at lowest appropriate field units.

F. General Assistance: When requested, FWS will assist BLM in a manner consistent with this Memorandum of Understanding (MOU), through cooperative procedures mutually agreed to by BLM State Directors and FWS Regional Directors, or as appropriate, Directors or Leaders of other BLM or FWS field units. Likewise, BLM will be available to participate in certain FWS field projects and activities to provide specialized expertise in programs of contaminant resource investigations, data collection such as T/E species habitat information, range management assistance on National Wildlife Refuges, as well as matters involving land exchanges or transfers, mineral reports, cadastral surveys, and land patents.

G. Conflicts: Conflicts shall be resolved in accordance with procedures set forth in Section X of this agreement. Each Agency will strive to support the other in the public arena, to the maximum extent possible.

V. GENERAL PRINCIPLES AND PROCEDURES

A. RESOURCE MANAGEMENT (LAND USE) PLANNING

Principles: The cooperative relationship between the two Agencies is built upon the concept that the timely opportunity for review, advice, suggestions, and information exchange on issues or topics which may affect or influence the other Agency's programs during the resource management (land use) planning processes, will contribute to the achievement of objectives of both Agencies. Coordination helps managers of both Agencies keep apprised of the other's plans and assures that appropriate consideration is given to those plans. Further, it helps both Agencies to jointly identify opportunities for enhancement of their respective programs.

Procedures:

1. Both Agencies will review the draft resource management (land use) planning documents of the other within their area of expertise by participating in a consultative manner to minimize conflicts and disagreements. FWS will recognize BLM's responsibility to balance fish and wildlife interests with other concerns in multiple-use management. BLM will recognize FWS's responsibility to manage primarily for fish and wildlife resources on lands under its jurisdiction.

2. Both Agencies will annually share and exchange resource management (land use) planning schedules and planning status reports showing both the status of resource management plans being prepared and projected planning schedules.

3. BLM and FWS will coordinate the preparation and revision of planning manuals and handbooks implementing their land use planning processes and procedures in order to provide for procedural compatibility and uniformity, consistent with Agency requirements.

4. Both Agencies will provide for appropriate dual representation on the other's planning teams where lands are contiguous, or where other conditions suggest dual representation.

5. BLM and FWS will conduct joint and/or coordinated review of activities with other Federal agencies, State and local governments, and Indian tribes where planning schedules, issues, and contiguous or related planning activities make such approaches feasible.

6. Both Agencies will establish comparable resource program standards and guidelines for use in land use planning and management, consistent with each Agency's mission, goals, and objectives under respective legislative authorities. Such supplemental program guidance may include but not be limited to transportation and utility corridor designations, the identification of areas of Federal minerals acceptable for further consideration for leasing, Wild and Scenic River recommendations, wilderness studies, and important fishery resources (e.g., salmon and steelhead).

7. BLM State Directors and FWS Regional Directors will develop supplemental procedures, consistent with this MOU, to provide for regular exchange of information and advice as early as feasible in the planning process of their respective Agencies.

B. INVENTORY, ANALYSIS, AND SHARING OF RESOURCE DATA

Principles: BLM is responsible for assuring the collection, inventory, and subsequent analysis of fish, wildlife, vegetation, and other resource-related data on the public lands. FWS has responsibilities for collection and analysis of data to meet its requirements relative to endangered species, fishery resources, migratory birds, and other wildlife species. Both Agencies are concerned with the general adequacy of data and analysis for management and protection of fish and wildlife and their habitats, and T/E species on a national, regional, and/or State basis.

Procedures:

1. Both Agencies will coordinate inventory system development and applicable data-gathering activities to foster a common and compatible resource data base, to share information, and to minimize conflicts and disagreements concerning adequacy of relevant fish and wildlife and mineral resource data. Both Agencies will work in partnership to ensure that needed data are obtained in a cost-effective and expedient manner, including coordination to use compatible inventory techniques and developing standards and methods to facilitate data exchange.

2. BLM will conduct public land inventories where and when necessary as determined by management decisions. Each Agency will seek participation of the other in the actual conduct of data collection activities to meet their requirements where practical to do so. FWS and BLM will provide mutual support in terms of cooperative development of new methodology and inventory techniques that will facilitate data collection and mutual management decisions.

3. FWS will conduct inventories and collect data necessary for Critical Habitat determinations under the Endangered Species Act on private surface, including lands under which Federal minerals are located. These and other pertinent data will be provided to BLM when requested. All pertinent information on public lands will be made available to the FWS upon request.

4. Both Agencies have a management thrust to identify, protect, manage or otherwise enhance important wetland resources. FWS conducts the National Wetlands Inventory mapping activities and will provide assistance to BLM upon request in wetlands delineation, mapping, mitigation, and enhancement activities.

5. Each Agency will furnish or otherwise make available unpublished resource information and data to the other, upon request, when practical to do so. Both Agencies will explore ways to improve the exchange and distribution of resource-related materials which may be applicable to the planning, decisionmaking, and evaluation needs of the other.

C. ENVIRONMENTAL ANALYSIS

Principles: The National Environmental Policy Act (NEPA) requires agencies taking major Federal actions significantly affecting the quality of the human environment to prepare environmental impact statements (EISs) on those actions. Key features of the NEPA process, including scoping, public notice, and review requirements, provide both Agencies meaningful opportunities to coordinate proposed Agency decisions/actions of interest to the other Agency. The preparation of EISs (and EAs under some circumstances) must be carried out in consultation with all appropriate agencies and organizations.

Procedures:

1. Each Agency will keep the other apprised of the status of EISs in preparation and the schedule for projected new EISs, via the regularly scheduled meetings of the FWS/BLM Coordinating Committee, meetings of field organizational officials and by other means, as appropriate.

2. Each Agency will request from the other data and other inputs into the applicable EISs and EAs at the earliest possible date. Where one Agency has special expertise or unique talent needed by the other, it will be made available to the EIS or EA team under terms and conditions mutually agreeable to the concerned FWS Regional Director and BLM State Director. This may include detail of personnel to assist in EIS or EA preparation.

3. Where budgets are being formulated in advance for specific efforts that involve contiguous lands or preparation of EISs where either BLM or FWS is a cooperating Agency, normally the budget of the Agency which has the lead for such EIS or EA preparation will be the vehicle for appropriate fund and manpower requests. Coordination at the field level will be in accordance with procedures agreed to by FWS Regional Directors and BLM State Directors.

4. Each Agency will provide to the other review copies of draft EISs at the earliest possible time for official review and comment within specified time frames.

D. RESEARCH

Principles: Resource-related research efforts of both Agencies will be coordinated in the best interest of sound resource management and for maximum cost effectiveness.

Procedures:

1. Each Agency will be given an opportunity to identify and review the other's research proposals relating directly to its lands or management responsibilities to avoid duplication, help ensure management application when appropriate, and determine whether similar research is being conducted by other sources.

2. Pertinent research results, including significant interim findings, of either Agency will be made available to the other on a timely basis. BLM State and District offices are to be included on applicable FWS mailing lists, including cooperative fishery and/or wildlife units, for research reports and summaries on matters that relate or that are applicable to fish and wildlife, mineral, and vegetation resource management on the public lands. FWS Regional and appropriate Field Offices are also to be included on the mailing list for BLM Technical Notes and similar publications.

3. FWS and BLM may conduct cooperative research either on public lands or elsewhere. FWS shall coordinate, in advance, with the appropriate BLM State Director, plans for research or special studies on public lands.

E. ENDANGERED SPECIES CONSULTATION/COORDINATION

Principles: Both Agencies are firmly committed to the protection and recovery of listed or proposed T/E species. Both also recognize the need and requirements for close consultation on any action which may affect such species or their habitats.

Procedures/Consultation:

1. General

(a) Whenever the Bureau suspects that T/E species or their habitat may be affected by BLM activities, the concerned BLM State Director must initiate consultation in accordance with the Endangered Species Act and Interagency

Cooperation Regulations. Conferences are also required for all actions that are likely to jeopardize the continued existence of species proposed for listing or result in the destruction or adverse modification of proposed critical habitat. To the extent that the concerned BLM State Director and FWS Regional Director can agree, and as provided for in the above regulations, an aggregate approach to consultation on the public lands will be followed.

(b) Whenever FWS finds that additional data would provide a better information base upon which to issue a biological opinion, such data should be provided by BLM before the consultation process can be concluded. Information on T/E species collected by FWS or BLM should be routinely exchanged to benefit the data gathering and analysis efforts of both Agencies.

(c) It is jointly agreed that only those habitat modifications which destroy or adversely modify designated critical habitat of a listed species or proposed critical habitat of a proposed species, or which jeopardize the continued existence of the species, are prohibited.

(d) The FWS will provide methodology, expertise, and recommendations, upon request, to help resolve problems caused by activities not wholly compatible with the presence of threatened or endangered species on public lands.

(e) FWS will alert BLM at the earliest possible date when species inhabiting public lands have been scheduled for proposed listing. This will enable BLM to supplement data already available to FWS with any that it may have available.

(f) FWS will alert BLM prior to proposing to determine critical habitat. It also will ensure proper coordination prior to proposing experimental populations. This includes discussion of potential management restrictions that may occur as a result of establishing such experimental populations.

2. Recovery Teams

(a) FWS shall provide technical leadership, unless otherwise designated to a representative of another agency, in developing and implementing recovery plans for T/E species.

(b) BLM shall be afforded an opportunity to participate on recovery teams where such plans involve species inhabiting public lands under its administration.

F. SIKES ACT COOPERATION

Principles: Both Agencies agree to the need for maintaining guidelines and procedures for the planning, coordination, and development of fish and wildlife programs under authority of the amended Sikes Act.

Procedures:

1. BLM, in cooperation with the States, will develop and implement comprehensive programs for management, conservation, and rehabilitation of wildlife resources on the public lands under its control.

2. FWS, upon request and within its responsibility and capability, will provide technical assistance to BLM relative to such comprehensive plans for management of the public lands under BLM control.

3. State cooperative wildlife habitat management plans developed in accordance with the Act shall be coordinated to the extent practical with statewide comprehensive plans developed under authority of the amended Federal Aid in Fish and Wildlife Restoration Act (Public Law 91-503).

G. FISH AND WILDLIFE DISEASES

Principles: A variety of diseases are capable of inflicting heavy losses among fish and wildlife populations. To minimize losses from disease, both Agencies recognize the need for close cooperation in the early detection, quick and accurate diagnosis, and rapid implementation of suitable control activities.

Procedures: BLM State Directors and FWS Regional Directors will prepare contingency plans which will describe procedures and methods for combatting disease outbreaks which occur on public lands.

H. FISH AND WILDLIFE COORDINATION ACT COOPERATION

Principles: Both Agencies agree that the Fish and Wildlife Coordination Act should be read and interpreted in the light of its primary purpose. Recognizing exclusions provided by Section 2(h) of the Act, the purpose is nonetheless to ensure that fish and wildlife and associated environments be given equal consideration and be coordinated with other features of water resource development programs.

Procedures:

1. BLM will consult--at the earliest appropriate stage of its planning process--with the FWS and with the appropriate State agency when it is proposing to construct or to permit actions involving water development other than those excluded by Section 2(h) of the Act.

2. FWS will review the proposed water development activity and will prepare a report to BLM which will assess or concur in BLM's assessment of project impacts on fish and wildlife resources. In addition, FWS will make recommendations or concur with BLM's recommendations on (1) how to avoid or compensate through established mitigation procedures for loss of fish and wildlife and associated resources, and (2) how to improve or enhance these resources.

3. BLM will give full consideration in its decisions to the report and recommendations made by the FWS and will incorporate into the permit or lease mutually agreed-upon stipulations that would avoid or compensate for adverse impacts, and/or enhance fish and wildlife resources.

I. PERMITS REGARDING WORK AFFECTING NAVIGABLE WATERS, WATERS OF THE UNITED STATES, AND OCEAN WATERS

Principles: The Secretary of the Interior has delegated to the FWS the responsibility for coordinating and reporting Interior's comments on applications for permits issued by the Corps of Engineers (COE) for dredging, filling, excavation, discharge of dredged or fill material, and other activities, including construction of facilities and works in the navigable waters and ocean waters of the United States (503 DM 1, August 3, 1973) when permit issuance does not require an EIS, or an EA accompanied by a COE project report. (Navigable waters include all streams, rivers, lakes, headwaters, impoundments, waters used for interstate commerce, and adjacent wetlands.) Permits pursuant to the Rivers and Harbors Act of 1899, the Clean Water Act of 1977, the Marine Protection, Research, and Sanctuaries Act of 1972, and other applicable legislation may be required for activities conducted on public lands and waters under the control of BLM. These permits may or may not fall under the provisions of 503 DM 1.

Procedures:

1. Proposals and permit applications for applicable activities and operations on public lands under BLM control and conducted by the BLM shall be coordinated by the BLM District Offices with the appropriate FWS Regional or Field Office before a formal application is made to the appropriate regulatory agency.

2. For all permit applications falling under the provision of 503 DM 1, BLM District Offices will be responsible for arranging for the receipt of permit applications, reviewing them in accordance with their program interests, and cooperating in resolution of differing views pursuant to Section 503.1.3 E. Review comments proposed by BLM for COE public notices will be provided to FWS for inclusion in the DOI letter that FWS prepares. Note: The COE's regulatory policy regarding "pre-discharge" notification for proposed filling activities affecting 1 to 10 acres is specified in the Final Regulation for Controlling Certain Activities in Waters of the U.S. (33 CFR 320, 323, and 330). For these 1-to-10-acre filling activities, it is the FWS' responsibility to recommend whether an individual permit should be required. The COE ultimately makes the final decision.

J. WILD HORSES AND BURROS

Principles: Both Agencies recognize the need for cooperative management of wild free-roaming horses and burros which normally range interchangeably upon their lands.

Procedures:

1. BLM State Directors and FWS Regional Directors will develop agreements and, as appropriate, joint plans for the management of wild horses and burros which range interchangeably upon the lands of the other.

2. BLM State Directors shall consult with FWS Regional Directors in those areas where wild free-roaming horses and burros are found when determining appropriate management levels for these animals and whether actions should be taken to remove excess animals.

K. FIRE MANAGEMENT AND PROTECTION

Principles: The need for sound wildland fire management programs, rapid response to wildfire in high danger situations, and efficient utilization of fire control personnel and equipment is jointly recognized. Where fire management plans are prepared, coordination along common boundaries will occur. Further, the use of prescribed fire as a habitat or other resource management tool will be practiced by both Agencies, to the extent appropriate.

Procedures: Each Agency will provide fire management assistance to the other as determined by appropriate field officials. Fire suppression capabilities of both Agencies will be coordinated, as appropriate, through the Boise Interagency Fire Center and through fire officials designated by BLM State Directors and FWS Regional Directors. (In Alaska, the Alaska Fire Service (BLM) is the lead fire suppression Agency, as specified in the BLM-FWS-BIFC agreement of April 1982.) Prescribed fire, where practical, will be conducted in conformance with the respective Agency's land use or resource management plans. A prescribed fire plan will identify personnel, equipment, fire engines, and needs and assignments. Aviation assets of both Agencies will be coordinated in the best interest of sound resource management and for maximum cost effectiveness.

L. CADASTRAL SURVEYS

Principles: Cadastral surveying involves the creation and reestablishment of the Public Land Survey System (PLSS), which defines the boundaries, the subdivision of the areas, and the determination of the amount of area within such surveys; the preparation of the official plat and written record of these surveys to be used in describing lands for patents, leases, or retention for Federal management purposes and the preparation of protracted Federal boundaries over unsurveyed lands.

Procedures:

1. Departmental cadastral surveying will follow the Manual of Instructions for the Survey of the Public Lands of the United States (1973 edition), and its amendments and supplements published by BLM (see 757 DM 2.7).

2. The BLM is responsible for the administration, coordination, and execution of the Public Land Survey System (PLSS). This includes the establishment and maintenance of a system for the storage and dissemination of survey data for use by local and national realty, land title, and mapping interests. The data also include the geographic coordinates of all corner positions established or reestablished under, or directly related to, the PLSS, called the Geographic Coordinate Data Base (GCDB). BLM is the custodian of the official U.S. public land survey records and maintains public information centers in those States which still have active cadastral survey programs and in Washington, D.C. BLM is also responsible for establishing a direct line of cadastral survey data communication to the Department's National Mapping Program (U.S. Geological Survey (USGS)) on a continuing basis (see 757 DM 2.3B, National Mapping Program).

3. BLM responsibilities include the segregation by survey of valid private rights acquired through a variety of public land laws, including the general mining laws.

4. The FWS will coordinate its cadastral surveying needs with BLM through the Interagency Cadastral Coordinating Council. Note: The FWS has no authority to change the official PLSS records.

5. FWS shall submit its requirements for cadastral surveys to BLM with adequate lead time for program implementation. BLM will determine the apppropriate action necessary to satisfy the needs of each request. This may include the use of existing survey data or original surveys or resurveys by BLM. Such surveys may be provided by BLM on a reimbursable basis or funded by establishing a national priority program and transfer of funding to a 98xx account. In cases where BLM will provide the necessary instructions, guidance, and official approval of the records, the records of such surveys will then become part of the Bureau's public records.

M. INTERNATIONAL ACTIVITIES

Principles: In the development and implementation of international treaties, agreements, and legislation, both Agencies will work cooperatively in the study, protection, and management of fish and wildlife and other matters of mutual interest.

Procedures:

1. Each Agency will keep the other apprised of international actions of mutual concern.

2. Where mutually beneficial, both Agencies will jointly develop and implement programs to carry out international responsibilities.

N. WITHDRAWALS

Principles: The FWS and BLM jointly recognize that the National Wildlife Refuge System (NWRS) is an independent land management system mandated by statute and that it is appropriate for public lands needed for units of the system to be made available through Federal Land Policy and Management Act Section 204 withdrawal. It is also recognized that public lands needed for the National Wildlife Refuge System or for other FWS uses such as fish hatcheries, administrative sites, research areas, etc., be kept to a minimum necessary for proper administration of such areas.

Procedures:

1. To the greatest extent practical, outright withdrawal will be considered only after it has been determined that neither a right-of-way nor a cooperative agreement would provide for the proposed use.

2. FWS and BLM agree that discretionary mineral leasing operations on lands withdrawn for FWS purposes shall be allowed after compatible and enforceable lease stipulations and terms have been agreed to by FWS.

3. It is recognized that most FWS lands are not subject to Section 204(1) review provisions of the Federal Land Policy and Management Act of 1976. However, except for units of the NWRS, wherein by statute only Congress can remove lands from the Refuge System, the FWS will adhere to agreed-upon withdrawal review schedules and will make every effort to return other withdrawn public land to BLM administration when such lands are no longer needed for FWS purposes.

4. FWS and BLM will cooperate to the fullest extent possible to process withdrawal applications to completion in a timely manner.

5. BLM shall promptly furnish FWS the status of pending applications for withdrawals and revocations upon request.

O. LAND TENURE ADJUSTMENTS - EXCHANGES

Principles: The FWS and BLM jointly recognize that opportunities exist to effect ownership and management area adjustments to form more logical and efficient land and resource management areas for both Agencies. It is further recognized that land exchanges are a valuable tool with which to effect such changes. To take advantage of such opportunities, BLM and FWS understand the need for close cooperation in pursuing mutually beneficial exchanges, in a manner consistent with the Large Land Exchange Task Force Report as approved by the Under Secretary.

Procedures:

1. BLM and FWS shall ensure early communications at Field Office levels concerning exchange proposals before commitments are made by either Agency.

2. BLM and FWS shall exchange information and advice as early as possible in the planning process of each Agency where exchange opportunities are a consideration.

3. To the extent mandated by the Federal Land Policy and Management Act of 1976 and implementing regulations in 43 CFR Part 2200, BLM land use planning processes shall be used to determine the availability of public lands for exchange.

4. The benefitting Agency shall bear the administrative costs to the United States of an exchange.

5. BLM and FWS will actively seek and consider comments of affected States, local government and the general public before completion of an exchange.

P. PESTICIDES AND OTHER TOXIC SUBSTANCES

Principles: The application of pesticides is sometimes essential in the management of public lands for the protection of resources. It is recognized, however, that both positive and negative habitat changes may result from pesticide applications.

Procedures:

1. Pesticide applications on public lands will be conducted within the framework of BLM and Departmental policies. All such applications will be consistent with public land management decisions and stipulations regarding use as determined by BLM and with the registration labeling of the Environmental Protection Agency as required by P.L. 92-516. Alternatives to pesticide use should be fully explored before any pesticide application is initiated, if it is feasible to do so.

2. FWS and BLM each have expertise which the other may request for special projects involving the impact of toxic substances or the use of pesticides on public lands.

Q. LAW ENFORCEMENT COOPERATION/COORDINATION

Principles: The Secretary of the Interior has delegated law enforcement authority to the Directors of both Agencies and given them responsibility for cooperative assistance in enforcing the laws under their respective jurisdictions.

Procedures:

1. Special Agents of BLM and FWS are expected to recognize possible violations of Federal laws in the Agencies' respective jurisdictions and report immediately all such possible violations to the nearest available Special Agent of the Agency having primary jurisdiction.

2. Specific requests for investigative assistance will be handled on an individual basis through the Washington Office Chief, Branch of Law Enforcement of BLM and the FWS Assistant Regional Director for Law Enforcement.

3. When Special Agents of the BLM or FWS provide investigative assistance to the other Agency, the following guidelines will apply:

(a) In those situations where Special Agents of both Agencies are working together, the Agency having primary jurisdiction over the subject matter of the case will be the primary Agency, and will designate a case agent who will be responsible for directing the investigation and case reporting.

(b) In those situations where Special Agents are working independently while assisting the other Agency, supervision and case reporting will follow the normal routine of their Agency. Case reports will be promptly transmitted to the Agency having primary jurisdiction. Such reports shall be transmitted to the other Agency by the FWS Assistant Regional Director for Law Enforcement, and by the Washington Office Chief, Branch of Law Enforcement, BLM.

4. Special stipulations are as follows:

(a) The parties hereto shall meet as necessary to review operations hereunder. It is agreed that a mutually convenient date, time, and place will be set for said meetings.

(b) Each party will render such assistance as may be requested by the other provided that such assistance is within its capabilities and that such action will not jeopardize its ability to respond to demands within its own primary jurisdiction.

(c) Equipment may be loaned by one party to the other on an individual case basis. Such equipment becomes the responsibility of the borrower and will be returned in the same condition as when received, normal wear and tear excepted. Damage in excess of normal wear and tear will be repaired. Lost or destroyed items will be replaced or reimbursed.

(d) The parties agree to reimburse reasonable costs incurred by the assisting Agency in rendering requested assistance. Such reimbursement between Agencies shall be accomplished in the following manner: Agents shall submit all invoices for payment and vouchers for reimbursement of expenses to be processed for payment through normal channels. Immediately upon completion of the requested investigation, the agent shall forward his Agency an itemized list of expenses incurred, and in any case that an investigation extends more than one month from its inception, shall submit such itemization monthly. The assisting Agency shall promptly submit a SF-1081 billing to the requesting Agency with an itemized attachment showing the total amount incurred by the following categories: (1) Transportation expense; (2) Travel and per diem; (3) Miscellaneous and special expenditures.

R. PIPELINES

Principles - Section 28(C)(2) of the Mineral Leasing Act of 1920, as amended, and applicable regulations (43 CFR 2880) authorize the Secretary of the Interior, through BLM, to grant or renew rights-of-way (ROW) and/or temporary use permits (TUP) and to enter into cooperative agreements with other Federal agencies to expedite review of ROW and TUP applications for construction, operation, and maintenance of oil, gas, and associated products pipelines whenever such a project will cross lands administered by two or more Federal agencies. Whenever such a pipeline involves the statutory responsibilities of both the FWS and BLM, close coordination is essential and shall be guided by the following procedures.

Procedures:

1. Each Agency shall notify the other as soon as a proposed pipeline becomes known.

2. The appropriate FWS Regional Office shall notify the appropriate BLM State Office of any proposed pipelines crossing FWS-administered lands.

3. Project-specific cooperative agreements between the lead FWS Regional Office and BLM State Office may be required to define procedures to be used. These procedures will address relevant involvement in the needed environmental analysis, review and comment on the ROW grant, TUPs and associated terms and conditions and other matters related to mitigating fish and wildlife adverse environmental impacts.

4. Both Bureaus shall follow Departmental cost recovery guidelines and respective Bureau procedures in the collection and transfer of funds, and in the estimating and reporting of project obligations. Reimbursable costs will include direct and indirect agency costs (exclusive of management overhead) for project-related activities, including:

a. Preparation of an environmental analysis.

b. Section 7, Endangered Species Act Compliance.

c. Review and processing applications for TUPs.

d. Review and processing applications for ROW grants.

e. Development and review of grant and permit terms and conditions, including Notices-to-Proceed.

f. Review of project design and environmental plans.

g. Project monitoring and enforcement during the construction, operation, maintenance, and termination phases.

h. Special studies, as required and approved.

5. Prior to issuing a grant for a ROW across lands in the National Wildlife Refuge System, the BLM Authorized Officer must have a signed Compatibility Statement from the FWS Regional Director as required by 16 U.S.C. 668dd(d)(1)(B). The terms and conditions of the ROW grant must include mitigation requirements for crossing FWS-administered lands in accordance with 50 CFR 29.21-7(c). The fair market value for ROW across FWS-administered lands shall be determined separately and receipts deposited into the Migratory Bird Conservation Fund for National Wildlife Refuge System lands and to the Revenue Sharing Fund for other FWS lands.

6. The FWS has certain responsibilities on all pipeline projects, whether or not they cross FWS lands. For example, the Fish and Wildlife Coordination Act specifies responsibilities where water development may be involved. The FWS level of involvement will be determined by statutory responsibilities and the potential effects of the project on fish and wildlife resources.

VI. RELATIONSHIPS TO STATES, OTHER AGENCIES, AND INSTITUTIONS

Nothing in this MOU is intended to modify in any manner the present or future cooperative programs of either Agency with States, other public agencies, or educational institutions. BLM will ensure State wildlife agency involvement in its programs. Officials of both Agencies will also keep other agencies informed of their respective resource-related activities on lands under their jurisdiction. BLM and FWS both share the concern that State fish and wildlife resource agencies be routinely consulted to strengthen coordination and cooperative relationships. Every effort should be made to prevent duplicative requests or contacts for information and data assistance with these State agencies.

VII. OBLIGATION OF FUNDS

Nothing in this agreement shall be construed as obligating either party to the expenditure of funds in excess of appropriations authorized by law or otherwise commit either Agency to actions for which its lacks statutory authority.

VIII. RELATIONSHIPS TO PREVIOUS MEMORANDA OF UNDERSTANDING

The previously developed MOUs listed below become annexes to this Master MOU on the date subscribed by the last signatory, and are not changed by this agreement without prior joint review and concurrence. These include:

A. Interagency Coordination in Nonemergency Critical Habitat Determinations pursuant to Section 7 of the ESA of 1973 (effective March 18, 1976) (Annex I).

B. MOU on Coal (effective September 26, 1978) (Annex III).

C. BLM-FWS Fire Management Agreement (BIFC Intra-Department Agreement, April, 1982 (Annex IV).

The previously developed MOUs listed below are rescinded upon signature of this MOU since appropriate components are incorporated in this agreement or in the case of OCS, BLM responsibilities have been transferred to the Minerals Management Service.

A. Responsibility Definitions for OCS Operations (GS-BLM-FWS) (effective November 8, 1982).

B. MOU concerning OCS Activities (effective March 30, 1976).

C. MOU between BLM, FWS, and USGS concerning OCS Environmental Research and Monitoring Activities (effective April 30, 1976).

D. MOU between BLM and FWS on Mutual Law Enforcement Support (effective February 23, 1978).

E. Joint Subcommittee on Wildlife Management (effective October 7, 1975).

F. Joint Subcommittee on Program and Budget Development (effective October 30, 1975).

G. Supplemental MOU on Piplines (effective September 26, 1980).

IX. EFFECTIVE DATE, REVIEW, AMENDMENT, AND TERMINATION

This agreement shall become effective upon the date subscribed by the last signatory, and shall remain in force until terminated by either Agency upon 90 days written notice. It shall be reviewed by all parties no later than Calendar Year 1990 for adequacy and timeliness. Amendments to existing wording within this agreement may be proposed by either Agency at any time and shall become effective upon joint approval.

X. CONFLICT RESOLUTION

Responsible officials of both Agencies will strive to anticipate and avoid conflicts and seek to resolve conflicts that arise at the lowest organizational level possible. The facts regarding any conflict or issue that cannot be resolved at the working level will be forwarded to the next higher level of authority for resolution.

Director, Bureau of Land Management

Dec. 24, 1986
Date

Director, Fish and Wildlife Service

DEC 22 1986
Date

Reg'ge Mgr.

No. DACW56-3-74-570

COOPERATIVE AGREEMENT
BETWEEN THE DEPARTMENT OF THE ARMY
AND THE DEPARTMENT OF THE INTERIOR
U. S. FISH AND WILDLIFE SERVICE

THIS AGREEMENT, made and entered into this 6th day of January 19 75, between the Department of the Army and the Department of the Interior through the United States Fish and Wildlife Service hereinafter referred to as the Service,

WITNESSETH THAT:

WHEREAS, the United States, through the Department of the Army, has acquired certain lands in fee or fee, minerals subordinated, at the Optima Lake Project on the North Canadian River, Oklahoma, for the purposes of flood control, fish and wildlife, recreation, and other beneficial uses; and

WHEREAS, pursuant to the authority contained in Section 3 of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), there has been formulated a General Plan for fish and wildlife management in the Optima Lake Project, and said Plan has been approved by the Secretary of the Army, the Secretary of the Interior, and the head of the agency of the State of Oklahoma exercising administration of wildlife resources within the State:

NOW, THEREFORE, in accordance with Section 4 of the Act of Congress approved 22 December 1944, as amended (76 Stat. 1195; 16 U.S.C. 460d), and the aforesaid Fish and Wildlife Coordination Act and General Plan, the parties hereto enter into this Cooperative Agreement.

THE DEPARTMENT OF THE ARMY hereby makes available to the Service the land and water areas of the Optima Lake Project as shown substantially in dark green on the attached drawing labeled Exhibit "A" and as described in Exhibit "B" for the purpose of development, conservation, and management of wildlife resources thereon in accordance with said General Plan. Said exhibits are attached hereto and made a part hereof. This Cooperative Agreement shall be subject to the provisions and conditons of the said General Plan and to the following additional conditons:

1. The Department of the Army reserves all rights, in and to the lands above described, which are not herein specifically granted, and the right to use existing roads as a means of ingress and egress to and from any areas which the Department of the Army administers. In those cases where no roads exist, the Department of the Army reserves the right to designate, construct, maintain, and use roads or routes across said lands. No part of the foregoing shall be construed as a commitment by the Department of the Army to construct, improve, or maintain any road or route.

2. That the reservoir areas of the refuge will be open to the general public for recreational purposes, except when such use is determined by the Bureau to be contrary to the purposes and objectives of the refuge program.

3. The use and occupation of the said premises shall be without cost or expense to the Department of the Army, under the general supervision of the District Engineer, Corps of Engineers, Tulsa District, 224 South Boulder, Tulsa, Oklahoma 74102, hereinafter referred to as the "District Engineer", and subject also to such rules and regulations as he may prescribe from time to time.

4. That the Service shall, subject to the availability of funds for this purpose, correct any damage to the land and water areas included in this agreement which results as an incident to the use of said areas by the Bureau.

5. That the use of the land and water areas by the Service shall be subject at all times to access, occupation and use by the Department of the Army for all primary purposes of the project. The District Engineer shall give notice to the Service prior to conducting any activities on the premises covered by this agreement which may substantially affect the refuge management and development program.

6. That it is understood and agreed that the ownership of the United States in the area described in Exhibit "B" is subject to certain outstanding rights in third parties, such as easements for public roads and highways, access roads, pipelines, transmission lines, and similar matters. It is therefore agreed that the uses and administration of the area described herein shall be subject to all such existing rights and to subsequent rights granted in accordance with the procedures prescribed in condition 8 of this Cooperative Agreement.

7. No additions to or alterations of the premises shall be made without the prior written consent of the said District Engineer.

8. That the Department of the Army reserves unto itself the right to grant easements, leases, and licenses for any purpose whatsoever. Any application for easement, lease or license received by the Service shall be referred with recommendations to the said District Engineer for processing. Applications for easements, leases and licenses received by the Department of the Army will be coordinated with the Service for its recommendations. The Department of the Army will give full consideration to any adverse effect any proposed grant may have upon the wildlife management program prior to the execution of any such easement, lease or license. That the Service, in exercising its Governmental or proprietary functions, may plant and harvest agricultural crops, forage and other wildlife foods and cover, either directly or by service contract or under sharecrop agreements with local farmers, to provide (a) food for wildlife; (b) necessary compensation to farmers under any sharecrop agreement; and (c) a reasonable reserve to

allow for a poor crop season; (d) soil and moisture improvement. This reserve, if not needed for wildlife feeding purposes, may be sold by the Service and the proceeds from sales used to defray other costs of administering the fish and wildlife program at this project. Furthermore, the lands will not be utilized by the Service for the production of crops or any other purpose solely to produce revenue. Lands within the area available for lease for agricultural, grazing, or other purposes other than the farming and sharecropping activities of the Service will be leased by the District Engineer. The Service will establish and maintain adequate records regarding its management and farming activities. In the event that the Service should derive any net revenue from the management of this land, such revenue shall be paid the District Engineer at the end of each fiscal year.

9. That the Service assumes all responsibility for any mosquito abatement and/or control program that may be required for the premises.

10. That, as of the commencement date of this agreement, an inventory and condition report of all property and improvements of the Department of the Army included in this agreement shall be made by a representative of the Department of the Army and a representative of the Service to reflect the then present condition of said property. A copy of said inventory and condition report shall be attached hereto as Exhibit "C" and become a part hereof as fully as if originally incorporated herein. Upon the expiration, revocation, or termination of this agreement, a similar inventory and condition report shall be prepared and submitted to the said officer, said inventory and condition report to constitute the basis for settlement by the Service with said officer, for property shown to be lost, damaged or destroyed, any such property to be either replaced or restored to the condition required by condition 15 hereof, or at the election of the Department of the Army, reimbursement made therefor by the Service at the then current market value thereof.

11. That the Service shall administer and maintain the area included in this agreement in accordance with its Master Plan for wildlife development which shall be prepared by the Service and submitted to the District Engineer. There shall be included within this plan those areas that are designated for public hunting, for public fishing, for other recreational uses, for wildlife sanctuaries, and for the production of food for wildlife or other purposes; it shall also include the nature, site and plans of proposed construction and improvements, and their estimated costs. The District Engineer shall be informed, prior to the effective date, of any amendment to this Master Plan. Until such time as the Master Plan is completed by the Service, the District Engineer will be furnished, upon request, an annual report by the Service setting forth operational information. Further, the Service will furnish, upon request, data and other information to the District Engineer relative to Service use or public use of the area covered by this agreement.

12. That the Services shall protect the property from fire, vandalism and soil erosion, and may make and enforce such rules and regulations as are necessary, and within its legal authority in expressing the privileges granted in the permit.

13. That this agreement may be revoked at the discretion of the Secretary of the Army when a national emergency is declared by the President. In the event of failure of the Service to observe any of the provisions or conditions set out in this agreement, the District Engineer will so notify the Service of the particular violation, and the Service shall act immediately to correct any such violation. Unless the Service shall have so acted within a reasonable time, not to exceed one year, this agreement may be terminated by the Department of the Army.

14. This agreement may be relinquished by the Service at any time by giving the District Engineer at least thirty (30) days notice in writing.

15. If this agreement is relinquished or revoked as provided above the Service shall vacate the said premises, remove all property of the Service therefrom, and restore the premises to a condition satisfactory to the said District Engineer, ordinary wear and tear and damage beyond the control of the Service excepted, within such time as the Secretary of the Army may designate.

16. All signs showing the operating agency and the area or project name, shall include an acknowledgement that the land is managed under cooperative agreement with the US Army, Corps of Engineer, Tulsa District. All signs posting the area shall be subject to approval by the District Engineer.

IN WITNESS WHEREOF I have hereunto set my hand this 6th day of JANUARY, 1975, by direction of the Assistant Secretary of the Army.

Gordon M. Hobbs
Assistant for Real Property
OASA(I&L)

The above instrument, together with the provisions and conditions thereof, is hereby accepted this 24th day of MARCH 1975.

U. S. FISH AND WILDLIFE SERVICE

BY: Lynn A. Greenwalt
Director
(Title)

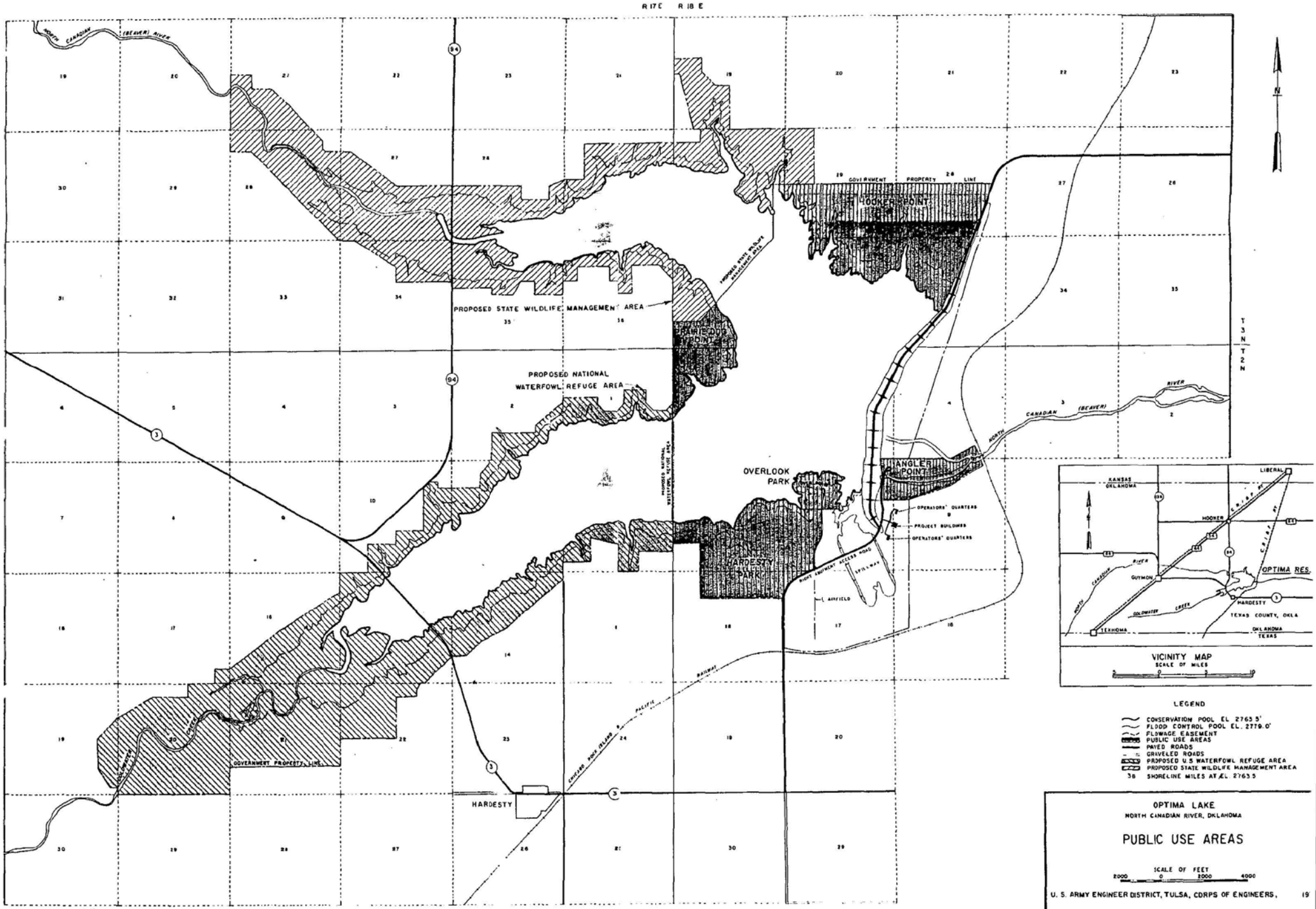
R17E R18E
T3N T2N
NORTH CANADIAN (BEAVER) RIVER
GOVERNMENT PROPERTY LINE
HOOKER POINT
PROPOSED STATE WILDLIFE MANAGEMENT AREA
PROPOSED STATE WILDLIFE MANAGEMENT AREA
FAIRE OAKS POINT
PROPOSED NATIONAL WATERFOWL REFUGE AREA
PROPOSED NATIONAL WATERFOWL REFUGE AREA
OVERLOOK PARK
ANGLER POINT
OPERATORS' QUARTERS
PROJECT BUILDINGS
OPERATORS' QUARTERS
HARDESTY PARK
RIGHT ABUTMENT ACCESS ROAD
SPILLWAY
AIRFIELD
GOLDWATER CREEK
GOVERNMENT PROPERTY LINE
CHICAGO ROCK ISLAND & PACIFIC RAILWAY
HARDESTY
N
KANSAS
OKLAHOMA
LIBERAL
HOOKER
GUYMON
NORTH CANADIAN RIVER
OPTIMA RES.
HARDESTY
TEXAS COUNTY, OKLA
TEXHOMA
OKLAHOMA
TEXAS
VICINITY MAP
SCALE OF MILES
LEGEND
CONSERVATION POOL EL 2763.5'
FLOOD CONTROL POOL EL. 2779.0'
FLOWAGE EASEMENT
PUBLIC USE AREAS
PAVED ROADS
GRAVELED ROADS
PROPOSED U.S WATERFOWL REFUGE AREA
PROPOSED STATE WILDLIFE MANAGEMENT AREA
38 SHORELINE MILES AT EL 2763.5
OPTIMA LAKE
NORTH CANADIAN RIVER, OKLAHOMA
PUBLIC USE AREAS
SCALE OF FEET
2000 0 2000 4000
U. S. ARMY ENGINEER DISTRICT, TULSA, CORPS OF ENGINEERS, 19
1220-M3B-93/1

EXHIBIT P&U

EXHIBIT B

CIMARRON MERIDIAN
Township 2 North, Range 17 East

SECTION 1: S½S½, NW¼SW¼, S½S½SW¼NW¼, SW¼SW¼SE¼NW¼, NW¼NW¼NE¼SW¼, Southwest diagonal half of the NE¼NW¼NE¼SW¼, S½N½NE¼SW¼, S½NE¼SW¼, S½N½SE¼, S½N½N½SE¼, Southeast diagonal half of the NW¼NW¼NW¼SE¼, NE¼NW¼NW¼SE¼, N½NE¼NW¼SE¼, Southwest diagonal half of the NW¼NW¼NE¼SE¼, southeast diagonal half of the NE¼NE¼NE¼SE¼, SE¼SW¼NE¼, E½SW¼SW¼NE¼.

SECTION 2: A tract of land in the NE¼SE¼, containing 25.00 acres, more or less, more particularly described as:

Beginning at the Northeast corner of said NE¼SE¼;
thence South 1,320.00 feet to the Southeast corner thereof;
thence West 1,320.00 feet to the Southwest corner thereof;
thence North 330.00 feet to the Northwest corner of the S½S½NE¼SE¼;
thence Northeasterly on a straight line to the point of beginning, S½SE¼, E½SE¼SW¼.

SECTION 10: All that part of the S½SW¼NE¼NE¼ lying South and East of the centerline of Oklahoma State Highway No. 94, SE¼NE¼, E½SE¼, S½NW¼SE¼, SW¼SE¼, SE¼SW¼.

SECTION 11: E½, SW¼, S½NW¼, S½NE¼NW¼, Southeast diagonal half of the NW¼NE¼NW¼, NE¼NE¼NW¼.

SECTION 12: N½, N½SE, W½SW¼SE¼, W½E½SW¼SE¼, NE¼NE¼SW¼SE¼, N½N½SE¼SE¼, N½N½S½SW¼SW¼, N½SW¼SW¼, NW¼SW¼, N½NE¼SW¼, N½S½NE¼SW¼, Northeast diagonal half of the S½S½NE¼SW¼.

SECTION 14: NW¼, a tract of land in the NE¼, containing 85.00 acres, more or less, more particularly described as:

Beginning at the Southwest corner of said NE¼;
thence North 2,640.00 feet to the Northwest corner thereof;
thence East 2,640.00 feet to the Northeast corner thereof;
thence South 330.00 feet to the Southeast corner of the N½N½N½NE¼;
thence Southwesterly on a straight line to the point of beginning, W½NW¼SW¼, NE¼NW¼SW¼, Northwest diagonal half of the SE¼NW¼SW¼, Northwest diagonal half of the N½NE¼SW¼.

SECTION 15: N½, SW¼, W½SE¼, NE¼SE¼, Northwest diagonal half of the SE¼SE¼.

Description checked and verified MAY 7 1974 DMJ

EXHIBIT B (continued)

CIMARRON MERIDIAN
Township 2 North, Range 17 East

SECTION 16: S½S½SW¼, a tract of land in the N½SW¼, N½S½SW¼, more particularly described as:

Beginning at the Northeast corner of said N½SW¼;
thence South 1,980.00 feet to the Southeast corner of said N½S½SW¼;
thence West 2,640.00 feet to the Southwest corner thereof;
thence Northeasterly on a straight line to the point of beginning.

ALSO a tract of land in the S½NE¼, S½S½NE¼NE¼ more particularly described as:

Beginning at the Southwest corner of said S½NE¼;
thence East 2,640.00 feet to the Southeast corner thereof;
thence North 1,650.00 feet to the Northeast corner of said S½S½NE¼NE¼;
thence Southwesterly on a straight line to the point of beginning, SE¼.

SECTION 17: SE¼SE¼SE¼.

SECTION 19: A tract of land in the E½E½ containing 56.25 acres, more or less, more particularly described as:

Beginning at the Northeast corner of SE¼NE¼SE¼NE¼;
thence Southwesterly on a straight line to the Northwest corner of E½W½NE¼SE¼;
thence South 1,320.00 feet to the Southwest corner thereof;
thence Southeasterly on a straight line to the Southwest corner of NE¼SE¼SE¼SE¼;
thence East 330.00 feet to the Southeast corner thereof;
thence North along the East line of said Section 19, 3,300.00 feet, more or less, to the point of beginning.

SECTION 20: A tract of land in the W½ containing 261.25 acres, more or less, more particularly described as:

Beginning at the Southwest corner of the SW¼;
thence East 2,640.00 feet to the Southeast corner thereof;
thence North 4,620.00 feet to the Northeast corner of NE¼SE¼NE¼NW¼;
thence West 990.00 feet to the Northwest corner of NE¼SW¼NE¼NW¼;
thence Southwesterly on a straight line to the Northwest corner of SW¼NW¼SW¼NW¼;
thence South along the West line of said Section 20, 3,630.00 feet, more or less, to the point of beginning, S½NW¼NE¼, NE¼NW¼NE¼, NE¼NE¼, S½NE¼, SE¼.

Description checked and verified MAY 7 1974 Dmg

EXHIBIT B (continued)

CIMARRON MERIDIAN
Township 2 North, Range 17 East

SECTION 21: N½, N½S½.

SECTION 22: NW¼, NW¼NW¼NE¼, W½NE¼NW¼NE¼, Northwest diagonal half of the W½NE¼NE¼NW¼NE¼.

The area described aggregates 4,332.81 acres, more or less, which consists of 1,620.50 acres, more or less, of water and 2,712.31 acres, more or less, of land in Texas County, Oklahoma.

Description checked and verified MAY 7 1974 DMJ

APPENDIX J

WASHITA/OPTIMA NWR COMPLEX

COMPATIBILITY DETERMINATIONS

Compatibility Determination

Use: Turkey Flat Fish Nursery

Refuge Name: Washita National Wildlife Refuge

County: Custer, Oklahoma

Establishing and Acquisition Authority(ies):

Fish and Wildlife Coordination Act, Migratory Bird Conservation Act, Refuge Recreation Act

Refuge Purpose(s):

"... shall be administered by him [Secretary of the Interior] directly or in accordance with cooperative agreements ... and in accordance with such rules and regulations for the conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon, ..." 16 U.S.C. § 664 (Fish and Wildlife Coordination 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?

Washita NWR would allow the Oklahoma Department of Wildlife Conservation (ODWC) to utilize the 10 acre Turkey Flat Moist Soil Unit as a nursery facility for native fish. Native fish species would be introduced into the wetland during the spring or summer months, either as brood stock or as fry, and after a period of time (between 45 and 60 days) would be discharged into the Washita River by means of a canal. This practice would, in principle, improve sport fishing in Foss Reservoir and the Washita River by providing fingerling fish - either as forage for predators, or as stocked sport fish. The number and species to be stocked would be determined by annual surveys (net, creel, or other means) conducted by the ODWC, and with the approval of the Refuge Manager. There would be no direct economic use of the refuge natural resources, but there would be an indirect economic benefit to the surrounding communities and businesses if the proposed activity results in improved fishing. There would be no other associated uses, equipment, and/or facilities required to support this activity as the primary use of the wetland is as a feeding and resting area for waterfowl, and the existing facilities lend themselves to this secondary use without modification.

Where would the use be conducted?

The area where the proposed use would be conducted is the Turkey Flat Moist Soil Unit (N 34 degrees 38 minutes 05 seconds, W 99 degrees 16 minutes 19.7 seconds). This 10 acre manmade wetland area is under construction at this time. With proper moist soil management by manipulation of water levels during different times of the year, hydrophytic vegetation is expected to dominate. This Moist Soil Unit comprises approximately 0.12 % of the refuge. Other adjacent areas would not be affected incidental to the proposed use as this use is secondary to the primary purpose of providing waterfowl habitat.

When would the use be conducted?

The proposed use would be conducted during the spring and/or summer for a duration of approximately 45 days (if 1 stocking), or for approximately 90 days if it is determined that we could rear 2 batches of fingerlings without adversely affecting the primary purpose of the facility. The nature of the activity is relatively benign, would not likely even be discernible to the visiting public, and would not negatively impact any other activity on the refuge.

How would the use be conducted?

If brood stock are introduced to the facility, several bales of hay would be placed into the wetland as egg laying substrate. If fry are stocked, there would be no need for any modification of the wetland. No other structures, equipment, staff, or associated facilities would be required.

Why is this use being proposed?

The use is proposed as a mutually beneficial cooperative venture by state and federal wildlife agencies. The proposed use furthers the mission of each agency, and is a cost effective multiple use of a facility. There are no other suitable facilities on public or private lands that lend themselves to a venture of this type.

Availability of Resources:

Resources involved in the administration and management of the use:

There will be minimal additional cost to managing this facility - primarily additional diesel fuel to run the water pump to maintain an appropriate water level. The Foss Lake Association has indicated that they are willing to fund this additional cost.

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 proposed use supports the mission of the Fish and Wildlife Service, the NWRS, and the Refuge while concurrently improving cooperation with the State conservation agency and improving the recreation opportunities and economic benefits in the local area.

Long-term impacts:

Improved cooperation with the State conservation agency and improved recreation opportunities and economic benefits in the local area are the anticipated direct and indirect long-term impacts.

Cumulative impacts:

Negative cumulative impacts could accrue to the refuge if the recreational fishing on Foss Lake improved to a point that a great increase in the number of fishing participants resulted (litter, wildlife disturbance, etc.).

Positive impacts could accrue to the refuge if the recreational fishing on Foss Lake improved to a point that a great increase in the number of fishing participants resulted (overall enjoyment of the out-of-doors, increased priority use, etc.).

Public Review and Comment:

The period of public review and comment began 7/2/2004 and ended 2/23/2005.

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

Public notice in newspaper with wide local distribution
Public meeting(s)
Media used to solicit public review and comment included Elk City Daily News.

Why was this level of public review and comment selected?

No opposition to the proposed use has been voiced or anticipated. Local newspaper ran several articles on the proposed use and no comments were generated at all. Local fishing stakeholders are very supportive.

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

No negative responses received. Positive responses received orally from 8 different stakeholders.

Determination:

Turkey Flat Fish Nursery	Use is compatible with the following stipulations.

Stipulations Necessary to Ensure Compatibility:

1) Timing of flooding and dewatering the wetland area must be accomplished so as not to impact the primary use of the facility (waterfowl feeding and loafing area). This generally translates to dry conditions during July and August annually. Some experimentation would be required to determine the best management schedule.

2) Stocking of native fish species is compatible; stocking of non-native species is not.

3) Service personnel will insure (2) above by sampling prior to stocking.

Justification:

The proposed use would support refuge, NWRS, and Service goals by improving the quality of a wildlife-dependent priority use experience (fishing). Compliance with the stipulations included in this document will insure the proposed use does not adversely impact fish, wildlife, plants and their habitats; or the biological integrity, diversity, and environmental health of the refuge and NWRS.

Signature: Refuge Manager _____
(Signature and Date)

Concurrence: Regional Chief _____
(Signature and Date)

Mandatory 10--Year Re-Evaluation Date: **2017**

Draft Compatibility Determination

Use: Turkey Hunting

Refuge Name: Washita National Wildlife Refuge

County: Custer, Oklahoma

Establishing and Acquisition Authority(ies):

Fish and Wildlife Coordination Act, Migratory Bird Conservation Act, Refuge Recreation Act

Refuge Purpose(s):

"... shall be administered by him [Secretary of the Interior] directly or in accordance with cooperative agreements ... and in accordance with such rules and regulations for the conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon, ..." 16 U.S.C. § 664 (Fish and Wildlife Coordination 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?

Expansion of the Upland Hunting Program on Washita National Wildlife Refuge to include hunting for wild turkey, which is a wildlife-dependent public use.

Where would the use be conducted?

All areas of the refuge that do not pose a safety concern or conflict with other priority uses may be opened for hunting at the Refuge Manager's discretion. This includes approximately 5,000 acres of habitat (approximately 62 percent of the refuge total area). The proposed hunting area is gently rolling hills, with uplands vegetated predominately in grass species (short-, mid-, and tall-grass prairie), and areas adjacent to streams vegetated by shrubs and tree species. Approximately 2,000 acres of the proposed hunt area are cultivated and planted to wheat, grain sorghum, or other crops via cooperative and force account farming. The Washita River and Foss Reservoir are the major land features within the area.

When would the use be conducted?

One or more hunts would be conducted on Friday, Saturday, and Sunday during either: (1) the Oklahoma Special Youth Hunting Season (one week in late March), (2) General Spring Season (April and May), (3) General Fall Season (October and November), or by special arrangement with the Oklahoma Department of Wildlife Conservation (ODWC). Initially, we would host 1 Youth Hunt of 1 1/2 to 2 1/2 days in duration - and expand or reduce the frequency or duration of the hunts based on post-hunt assessments and turkey population survey data. Other categories of participants (general hunts for adults, hunts for disabled participants, etc.) may be added if conditions warrant.

How would the use be conducted?

The number of participants would be determined based on safety considerations and current turkey population survey data. It is anticipated that there would be no more than 7 participants per hunt.

Participants would be selected via the ODWC Controlled Hunts Program. The refuge would provide successful applicants a map of the hunt area, a list of refuge-specific regulations, and an overview of hunt procedures in advance of their hunt. Participants would attend a mandatory orientation on the first day of the hunt. During the orientation, individual hunting areas would be assigned (with a description of the area boundaries). Refuge staff would also provide a review of refuge regulations, safety reminders, description of non-target wildlife and livestock, and a check of licenses/permits. After the orientation, refuge staff and/or volunteers would lead the participant to the areas and point out the area boundaries to the hunter.

Hunting would be restricted to shotgun only, using non-toxic shot, size BB (.180") or smaller. A variety of hunting techniques (calling, still hunting, stalking, etc.) would likely be employed, but would be at the discretion of the individual hunter.

If the selected hunter is under the age of 18, he/she would have to be accompanied by a non-hunting adult.

No additional supporting facilities or uses would be required.

Why is this use being proposed?

Turkey hunting on the refuge is proposed to provide an additional recreational hunting program - one of the 6 priority uses for refuges identified in the National Wildlife Refuge System Improvement Act. While similar opportunities exist nearby on both private and public lands, the proposed use would provide additional high quality recreational opportunities for users who don't have access to private land, and don't wish to compete with other hunters on the scarce public lands (approximately 97% of land in Oklahoma is privately

owned).

Turkeys are a renewable resource that have increased dramatically in recent years on the refuge - to the point where a recreational hunt can be conducted without adverse impact to the population.

By conducting Youth Hunts on the refuge, we will be encouraging family-oriented outdoor recreation and supporting the tradition of hunting.

Expansion of hunting opportunities on the refuge promotes positive relationships with the public, hunting organizations, and the Oklahoma Department of Wildlife Conservation.

Availability of Resources:

Resources involved in the administration and management of the use:

Annual staff time to administer the program - $2,000
Supplies and materials $ 100

Total $2,100

The use of volunteer labor could reduce the administrative burden and hunt support costs significantly. There are 2 active Chapters of the National Wild Turkey Federation located within 26 miles of the refuge.

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

Maintenance costs: None

Monitoring costs:

The refuge staff conduct routine monitoring of the turkey population at present as a component of the Biological Inventory and Monitoring Program. There would not be a need for additional monitoring to support the hunting program.

Offsetting revenues:

Anticipated user fees would return between $0 and $100 per year.

National Wild Turkey Federation and/or other hunting oriented organizations may provide labor or financial support to the program.

Anticipated Impacts of the Use:

Short-term impacts:

The proposed use would support the NWRS mission, refuge establishment purposes, and refuge objectives by providing a high-quality recreational opportunity for public use and enjoyment of wildlife resources. There would be minor disturbance of limited duration to other wildlife during the hunt. There are no anticipated impacts to the biological integrity of the refuge. There is a potential displacement of other refuge visitors who would not be able to participate in other refuge activities during the period of the hunt. There is an inherent public safety risk associated with the use of firearms.

The proposed use would divert resources from other refuge activities. These activities would likely be of lower priority - resulting in an overall neutral or positive indirect impact to the refuge.

Long-term impacts: None

Cumulative impacts:

Hunting mortality could be additive in conjunction with other factors such as disease or increased predation - resulting in a cumulative negative impact to the turkey population. Adaptive management will minimize the likelihood of this effect.

Public Review and Comment:

The period of public review and comment began 4/17/2006 and ended 5/1/2006.

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

Public notice in newspaper with wide local distribution
Posted notices in public places
World Wide Web
Media used to solicit public review and comment included Elk City Daily News, Clinton Daily News.

Why was this level of public review and comment selected?

Turkey hunting is a long-standing popular practice in western Oklahoma, and we did not anticipate a large number of responses (positive or negative), but wished to offer ample opportunity to comment.

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

Determination:

Hunting (upland game)	Use is compatible with the following stipulations.

Stipulations Necessary to Ensure Compatibility:

Biological data on the refuge turkey population would be collected and analyzed for use in adaptive management of the resource.

Hunting season dates, bag limits, and regulations would be coordinated between the refuge and Oklahoma Department of Wildlife Conservation biologists.

All hunters (and adult Mentors if Youth Hunt) must attend a pre-hunt briefing on the first day of the hunt.

Law Enforcement personnel would ensure compliance with refuge regulations and State laws for the protection of refuge resources.

Adequate staffing (Service, ODWC, and/or volunteer) to insure safety would be provided.

Only federally approved non-toxic shotshells allowed.

Hunters must check harvested birds at the refuge check station.

Hunters must check out at the refuge check station upon completing their hunt.

All other state laws and refuge regulations must be observed.

Justification:

The local turkey population has attained sufficient numbers to support a controlled hunt on the refuge. This proposed use would increase outdoor recreation opportunities consistent with the purpose for which the refuge was established, and would support the mission of the NWRS. Under controlled conditions, hunting would not adversely impact fish, wildlife, plants or habitat - or the biological integrity, diversity, and environmental health of the refuge and NWRS.

Signature: Refuge Manager _____
(Signature and Date)

Concurrence: Regional Chief _____
(Signature and Date)

Mandatory 10- or 15-Year Re-Evaluation Date: 2022

Draft Compatibility Determination

Use: Deer and Feral Hog Hunting

Refuge Name: Washita National Wildlife Refuge

County: Custer, Oklahoma

Establishing and Acquisition Authority(ies):

Fish and Wildlife Coordination Act, Migratory Bird Conservation Act, Refuge Recreation Act

Refuge Purpose(s):

"... shall be administered by him [Secretary of the Interior] directly or in accordance with cooperative agreements ... and in accordance with such rules and regulations for the conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon, ..." 16 U.S.C. § 664 (Fish and Wildlife Coordination 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?

Washita NWR would administer annual hunts for deer and feral hogs, a wildlife dependent public use.

Where would the use be conducted?

The proposed use would occur through out the refuge as designated by refuge management.

When would the use be conducted?

The proposed use would be conducted during the fall deer hunting season, as administered by the Oklahoma Department of Wildlife Conservation (ODWC).

How would the use be conducted?

The hunts would be administered by refuge personnel in coopration with staff of ODWC.

Why is this use being proposed?

An overabundance of white-tailed deer and the presence of feral hogs on the refuge causes destruction of habitat. These impacts are researched and well documented. The negative effects impact a wide range of plant and animal species. On the refuge, an overabundance of deer and hogs impacts the amount of forage available to migratory waterfowl, reducing the refuge's ability to accomplish its purposes. The proposed deer and hog harvest will enable the refug to manage populations of these species and reduce forage loss and damage to native habitat. The permitted activity will cause minor distrubance of limited duration to other wildlife and the effects are not expected to be permanent.

Availability of Resources:

Resources involved in the administration and management of the use:

There will be a need to use approximately $7000 worth of staff time annually to administer the hunts..

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

Maintenance costs:

Annual maintenance costs of approximately $800 for supplies and materials.

Monitoring costs: None

Offsetting revenues: None

Anticipated Impacts of the Use:

Short-term impacts:

The proposed use supports the mission of the Fish and Wildlife Service, the NWRS, and the Refuge while concurrently improving cooperation with the State conservation agency and improving the recreation opportunities and economic benefits in the local area. Hunting activity on ther refuge could result in some short-term disturbance of native wildlife.

Long-term impacts:

Reductions in the refuge populations of white-tailed deer and feral hogs should result in decreased damage to refuge habitats by these populations.

Public Review and Comment:

This compatibility determination will be reviewed concurrently with the Draft Comprehensive Conservation Plan for Washita NWR..

Determination:

White-tailed deer and feral hog hunting	Use is compatible with the following stipulations.

Stipulations Necessary to Ensure Compatibility:

1) Biological data will be collected and analyzed to ensure that the hunts that are held are biologically sound and that the the refuge deer herd is being controlled to the point preventing damage to habitat.

2) Hunting season dates and regulations will be cordinated with biologists on staff, in the Regional Office, and employed by the Oklahoma Department of Wildlife Conservation.

3) Law enforcement personnel will ensure compliance with refuge regulations and state laws for the protection of refuge resources.

Justification:

Hunting of deer and feral hogs will be used as a management method to protect refuge habitat and increase available forage for migratory waterfowl. Hunting, as proposed, is the most cost effective method to control deer and feral hogs. At the same time, this use will increase outdoor recreation opportunities consistent with the purposes for which Washita NWR was established. It has previously been determined that controlled hunting is a compatible activity on the refuge, and increasing opportunities for compatible hunting – especially by youth – on National Wildlife Refuges is listed as a pririoity in the National Wildlife Refuge System Improvement Act.

Signature: Refuge Manager _____
(Signature and Date)

Concurrence: Regional Chief _____
(Signature and Date)

Mandatory 10- or 15 year review date 2022

Draft Compatibility Determination

Use:
Agriculture – farming, haying and chemical weed management

Refuge Name:
Washita National Wildlife Refuge

County:
Custer County, Oklahoma

Establishing and Acquisition Authority(ies):
The Washita National Wildlife Refuge was established under provisions of the Fish and Wildlife Coordination Act (16 USC 664), Migratory Bird Conservation Act (16 USC 715d), and the Refuge Recreation Act (16 USC 460 k-1). By cooperative agreement, administration of 8,075 acres of land and water on the northern portion of Foss Reservoir was transferred from the Bureau of Reclamation to the Bureau of Sport Fisheries and Wildlife (now the U.S. Fish and Wildlife Service) on April 15, 1961.

Refuge Purpose(s):
1. The refuge "shall be administered by him [Secretary of the Interior] directly or in accordance with cooperative agreements … and in accordance with such rules and regulations for the conservation, maintenance and management of wildlife, resources thereof, and its habitat thereon, …" (16 USC 664, Fish and Wildlife Coordination Act).
2. The refuge shall be administered "for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" (16 USC 715d, Migratory Bird Conservation Act).
3. The refuge is "suitable for – (1) incidental fish and wildlife oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species …" (16 USC 460 k-1, Refuge Recreation Act). "… the Secretary … may accept and use … real … property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors … "(16 USC 460k, Refuge Recreation Act [16 USC 460k-460k-4], as amended).

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:

Approximately 2,000 acres of croplands on the Washita National Wildlife Refuge are farmed to provide food for wildlife. Although the ratio varies somewhat from year to year, refuge staff farms approximately half of the acreage and the balance is cooperatively farmed by area farmers operating under agreements with the refuge. Annual Cooperative Farming Agreements list acres

farmed by each cooperator, crop division percentages or acres and special conditions to be followed. An agreement is signed each year by each cooperator.

Winter wheat and milo are the primary crops grown. Winter wheat provides a source of green browse during the fall and winter months for geese, cranes, deer and other wildlife. Milo (grain sorghum) provides a high carbohydrate grain used by waterfowl, songbirds, deer and other wildlife during the colder months of winter. A variety of specialty crops are grown for specific wildlife foods, including millet, sunflowers, or soil builders such as clovers, vetch, cowpeas and winter peas.

Integrated Pest Management practices are employed on the refuge to control plant pests. Both the cooperators and refuge staff use some chemical herbicides to control weeds, but chemical application is limited to prevent harm to non-target plants, water quality, or wildlife using refuge farmed land. A variety of cultivation practices such as using a sweep plow to sever weed roots below the surface and drilling new crops through the existing stubble of the previous season are used where possible, to control weeds with reduced chemical inputs. All chemical use will be pre-approved through the Pesticide Use Proposal process. Service policy requires that only minimal amounts of chemicals are used on refuge lands.

Haying occurs on limited areas planted to domestic grasses, subject to issuance of special use permits. It is used as a management tool to maintain grassed waterways or to control invasive species. Haying is also used as a cost efficient means to remove standing vegetation during restoration of native grasses and forbs to areas that have been previously dominated by non-native vegetation.

Availability of Resources:
Adequate funding, farm implements and staff are available. Annual plantings of force account crops are a major effort during spring and fall, and cultivation to control agricultural weed pests occurs throughout the spring and summer months. Cultivation and planting typically requires in excess of 400 staff hours, and equipment maintenance requires and additional 400 hours. Fuel, equipment repairs, seed, fertilizer, and herbicide application costs usually exceed $26,000 per year. Administering Annual Cooperative Farming Agreements requires 120 staff hours each year.

Anticipated Impacts of the Use:
The agricultural activities on the refuge are directly related to and support the purposes for which the refuge was established. The crops grown on the refuge provide food for a peak population of 90,000 geese, 15,000 ducks and 4,000 sandhill cranes each fall. A resident population of deer and a variety of other wildlife species benefit from the cropland program. Up to 15 bald eagles use the refuge during the winter months and feed on waterfowl. Soil erosion of the fields is minimized by planting cover crops and by crop residue management. Chemical use is planned to prevent or limit acute or chronic adverse effects to wildlife. Some disturbance to ground nesting birds may result from the haying operation. The timing of hay cuts is delayed to minimize the number of occupied nests present.

Public Review and Comment:
This compatibility determination is available for public review and comment with the Draft Comprehensive Conservation Plan and Environmental Assessment for Washita and Optima National Wildlife Refuges. The Service will consider all substantive comments received.

Determination (check one below):
___ Use is Not Compatible
X Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:
The annual issuance of cooperative farming agreements and special use permits for haying that include special conditions for conducting the activity, along with routine inspections of the fields to insure compliance with the terms of the agreements, will ensure that compatibility is maintained. Service policy, directives and instructions in the Refuge Manual require reporting on farming, chemical weed management and haying activities.

Justification:
The agricultural program supports the refuge purposes by providing grain and forage for wildlife and by contributing to a diversity of habitat types. The acreage farmed by cooperators greatly reduces the budgetary and manpower requirements that would be needed if the refuge staff farmed all of the cropland. Haying benefits wildlife by providing and maintaining open areas for feeding and resting, retarding encroachment by woody species, and removing standing vegetation in areas targeted for native plant restoration.

Signature: Refuge Manager _____
(Signature and Date)

Concurrence: Regional Chief _____
(Signature and Date)

Mandatory 10-year Re-Evaluation Date (for uses other than the six-priority wildlife dependent public uses): 2017

Draft Compatibility Determination

Use:
Recreational fishing: from shore, using powerboats and using non-motorized boats

Refuge Name:
Washita National Wildlife Refuge

County:
Custer County, Oklahoma

Establishing and Acquisition Authority(ies):
The Washita National Wildlife Refuge was established under provisions of the Fish and Wildlife Coordination Act (16 USC 664), Migratory Bird Conservation Act (16 USC 715d), and the Refuge Recreation Act (16 USC 460 k-1). By cooperative agreement, administration of 8,075 acres of land and water on the northern portion of Foss Reservoir was transferred from the Bureau of Reclamation to the Bureau of Sport Fisheries and Wildlife (now the U.S. Fish and Wildlife Service) on April 15, 1961.

Refuge Purpose(s):
1. The refuge "shall be administered by him [Secretary of the Interior] directly or in accordance with cooperative agreements … and in accordance with such rules and regulations for the conservation, maintenance and management of wildlife, resources thereof, and its habitat thereon, …" (16 USC 664, Fish and Wildlife Coordination Act).
2. The refuge shall be administered "for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" (16 USC 715d, Migratory Bird Conservation Act).
3. The refuge is "suitable for – (1) incidental fish and wildlife oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species …" (16 USC 460 k-1, Refuge Recreation Act). "… the Secretary … may accept and use … real … property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors … "(16 USC 460k, Refuge Recreation Act [16 USC 460k-460k-4], as amended).

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:
Continuation of recreational fishing, including use of powerboats and non-motorized boats. Fishing and boating are permitted on refuge waters from March 15 to October 14. Water skiing and use of personal watercraft (pwc) are not allowed. The east shoreline of Foss Reservoir from Lakeview to Pitts Creek and the Washita River are open to fishing from the bank year-round. A buoy line clearly marks the south boundary of the refuge on Foss Reservoir.

Availability of Resources:
Adequate funding and staff are available. Administering fishing and boating on refuge waters and maintaining facilities to support these activities requires 180 staff hours per year.

Anticipated Impacts of the Use:
Recreational fishing should not have any adverse impacts on the fisheries resource of refuge waters. Foss Reservoir has been stocked with a variety of sport fish for many years, including striped bass, white bass, striped bass x white bass hybrids, crappie, largemouth bass, channel catfish, walleye and saugeye. About 1,800 acres of open water and the Washita River channel are available for fishing. This area is about one-fifth of the total surface area of Foss Reservoir. The removal of bait fish from refuge waters is not allowed.

Fishing and boating activities have been regulated to minimize adverse impacts to wildlife. Boating is not allowed from October 15 through March 14 so that roosting concentrations of waterfowl, sandhill cranes, bald eagles and other wildlife are provided sanctuary during this period. Some wading birds and shorebirds may be present during the time that boating is allowed. Disturbance to these species and other wildlife by boating and fishing activities should be minimal. Water skiing and personal watercraft are not allowed, and operating boats at high speeds is discouraged by numerous underwater hazards.

Fishing and boating activities account for more than half of the 44,000 annual visits to the refuge. Since the activity was first allowed on the refuge in the 1960s, very few problems or impacts on wildlife have occurred.

Public Review and Comment:
This compatibility determination is available for public review and comment with the Draft Comprehensive Conservation Plan and Environmental Assessment for Washita and Optima National Wildlife Refuges. The Refuge will consider all substantive comments received.

Determination (check one below):
___ Use is Not Compatible
X Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:
The refuge will continue to close waters to boating from October 15 through March 14 to prevent disturbance of wintering or migrating birds. Water skiing and the use of personal watercraft are prohibited as an inappropriate use of refuge waters.

Justification:
Fishing is one of the six priority wildlife dependent public uses that should be offered on refuges when compatible. Boating, with suitable restrictions, is appropriate to facilitate fishing access and wildlife observation.

Signature: Refuge Manager _____
(Signature and Date)

Concurrence: Regional Chief _____
(Signature and Date)

Mandatory 15-year Re-Evaluation Date: **2022**

Draft Compatibility Determination

Use:
Migratory bird hunting, goose and sandhill crane

Refuge Name:
Washita National Wildlife Refuge

County:
Custer County, Oklahoma

Establishing and Acquisition Authority(ies):
The Washita National Wildlife Refuge was established under provisions of the Fish and Wildlife Coordination Act (16 USC 664), Migratory Bird Conservation Act (16 USC 715d), and the Refuge Recreation Act (16 USC 460 k-1). By cooperative agreement, administration of 8,075 acres of land and water on the northern portion of Foss Reservoir was transferred from the Bureau of Reclamation to the Bureau of Sport Fisheries and Wildlife (now the U.S. Fish and Wildlife Service) on April 15, 1961.

Refuge Purpose(s):
1. The refuge "shall be administered by him [Secretary of the Interior] directly or in accordance with cooperative agreements … and in accordance with such rules and regulations for the conservation, maintenance and management of wildlife, resources thereof, and its habitat thereon, …" (16 USC 664, Fish and Wildlife Coordination Act).
2. The refuge shall be administered "for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" (16 USC 715d, Migratory Bird Conservation Act).
3. The refuge is "suitable for – (1) incidental fish and wildlife oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species …" (16 USC 460 k-1, Refuge Recreation Act). "… the Secretary … may accept and use … real … property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors … "(16 USC 460k, Refuge Recreation Act [16 USC 460k-460k-4], as amended).

Description of Use:
The proposed use is a continuation of the migratory bird hunting program at Washita National Wildlife Refuge that was initiated in 1982. A controlled goose and sandhill crane hunt is held on three cropland fields that are usually planted to winter wheat on the west side of the refuge. The hunt participants submit applications for their preferred hunt dates, are selected by random drawing and then issued permits that allow them to enter the hunt area. Twelve permanent blinds (one is accessible to Americans with Disabilities Act Standards) are spaced around the edges of the two fields. Only 10 of the blinds may be used during a hunt. Each blind will accommodate up to three hunters. Half day hunts are held on up to seven weekends from November to January. Weekly Wednesday hunts are also held during the same period. Blinds can be reserved for the Wednesday hunts by calling the refuge office at 8:00 am on the Tuesday prior to the hunt. Hunters

may shoot from blinds only and are required to remain in blinds until 11:30 am, the end of each day's hunt. A permit fee is required. Hunters are checked out as they leave the hunt area.

Availability of Resources:
Adequate funding and staff are available. Administering the hunt requires 160 hours of staff time.

Anticipated Impacts of the Use:
The impacts of the controlled migratory bird hunt program are minimal. Hunters are required to walk in to the hunt area. Wooden pit blinds require very little maintenance. The drawing process for hunts has been computerized, reducing manpower needs. Hunter compliance checks are conducted at the conclusion of each hunt. About 300 hunters participate each year and harvest approximately 250 geese and usually less than 6 sandhill cranes. The goose population typically numbers between 35,000 and 90,000 birds and the sandhill crane population typically peaks at near 4,000. The numbers of birds harvested from the controlled hunt have a very small impact on the overall continental populations.

Public Review and Comment:
This compatibility determination is available for public review and comment with the Draft Comprehensive Conservation Plan and Environmental Assessment for the Washita and Optima National Wildlife Refuges. The Service will respond to any substantive public comments regarding this use.

Determination (check one below):
___ Use is Not Compatible
X Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:
The current procedures for operating the hunt and the rules, regulations and special conditions governing the hunt are sufficient to ensure compatibility. Law enforcement compliance checks are conducted to assure adherence to licensing requirements, bag limits and hunting regulations. A Whooping Crane Plan is in place to educate hunters on identification of this endangered species, and if needed, to cancel a hunt if whooping cranes are observed in the area.

Justification:
Hunting is one of the six priority wildlife dependent public uses of National Wildlife Refuges. When compatible, it should be offered. A controlled goose and sandhill crane hunt is consistent and compatible with the purposes for which the Washita National Wildlife Refuge was created.

Signature: Refuge Manager _____
(Signature and Date)

Concurrence: Regional Chief _____
(Signature and Date)

Mandatory 15-year Re-Evaluation Date: 2022

Draft Compatibility Determination

Use:
Upland game hunting

Refuge Name:
Washita National Wildlife Refuge

County:
Custer County, Oklahoma

Establishing and Acquisition Authority(ies):
The Washita National Wildlife Refuge was established under provisions of the Fish and Wildlife Coordination Act (16 USC 664), Migratory Bird Conservation Act (16 USC 715d), and the Refuge Recreation Act (16 USC 460 k-1). By cooperative agreement, administration of 8,075 acres of land and water on the northern portion of Foss Reservoir was transferred from the Bureau of Reclamation to the Bureau of Sport Fisheries and Wildlife (now the U.S. Fish and Wildlife Service) on April 15, 1961.

Refuge Purpose(s):
1. The refuge "shall be administered by him [Secretary of the Interior] directly or in accordance with cooperative agreements … and in accordance with such rules and regulations for the conservation, maintenance and management of wildlife, resources thereof, and its habitat thereon, …" (16 USC 664, Fish and Wildlife Coordination Act).
2. The refuge shall be administered "for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" (16 USC 715d, Migratory Bird Conservation Act).
3. The refuge is "suitable for – (1) incidental fish and wildlife oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species …" (16 USC 460 k-1, Refuge Recreation Act). "… the Secretary … may accept and use … real … property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors … "(16 USC 460k, Refuge Recreation Act [16 USC 460k-460k-4], as amended).

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:
The proposed use is a continuation of the existing upland game hunting program for bobwhite quail and rabbit on the Washita National Wildlife Refuge. This use was initiated in 1965. The area of the refuge open to upland game hunting consists of 2,392 acres on the northern one-third of the refuge (except around the headquarters) and the upland areas adjacent to the east shoreline from the Lakeview Recreation Area to the upper portion of Pitts' Creek. Several parking areas are

available around the perimeter of the hunt area. The hunting season opens in early November and ends on or about February 15. Hunting pressure has been light to moderate, with the greatest activity occurring during the first two weekends and the last week of the season. Usually about 600 visits to the refuge for upland game hunting are recorded each year.

Availability of Resources:
Adequate funding and staff are available to administer this hunt.

Anticipated Impacts of the Use:
The impacts of the upland game hunt program are minimal. Few violations of refuge hunting regulations have been recorded. Maintenance of the parking areas and posting of the season dates requires only a small portion of the station staffing and budget. The quail and rabbit populations are sufficient to provide a harvestable surplus. The numbers of quail and rabbit taken have a little effect on the overall refuge populations.

Public Review and Comment:
This compatibility determination is available for public review and comment with the Draft Comprehensive Conservation Plan and Environmental Assessment for the Washita and Optima National Wildlife Refuges. The Service will respond to any substantive public comments regarding this use.

Determination (check one below):
___ Use is Not Compatible
X Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:
The current procedures, rules, regulations, and special conditions governing the hunt are sufficient to ensure compatibility. Laws enforcement patrols are conducted to assure compliance with hunting regulations.

Justification:
Hunting is one of the six priority wildlife-dependent public uses of National Wildlife Refuges. When compatible with the refuge purposes, hunting should be offered.

Signature: Refuge Manager _____
(Signature and Date)

Concurrence: Regional Chief _____
(Signature and Date)

Mandatory 15-year Re-Evaluation Date: **2022**

Draft Compatibility Determination

Use:
Wildlife observation and photography

Refuge Name:
Washita National Wildlife Refuge

County:
Custer County, Oklahoma

Establishing and Acquisition Authority(ies):
The Washita National Wildlife Refuge was established under provisions of the Fish and Wildlife Coordination Act (16 USC 664), Migratory Bird Conservation Act (16 USC 715d), and the Refuge Recreation Act (16 USC 460 k-1). By cooperative agreement, administration of 8,075 acres of land and water on the northern portion of Foss Reservoir was transferred from the Bureau of Reclamation to the Bureau of Sport Fisheries and Wildlife (now the U.S. Fish and Wildlife Service) on April 15, 1961.

Refuge Purpose(s):
1. The refuge "shall be administered by him [Secretary of the Interior] directly or in accordance with cooperative agreements … and in accordance with such rules and regulations for the conservation, maintenance and management of wildlife, resources thereof, and its habitat thereon, …" (16 USC 664, Fish and Wildlife Coordination Act).
2. The refuge shall be administered "for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" (16 USC 715d, Migratory Bird Conservation Act).
3. The refuge is "suitable for – (1) incidental fish and wildlife oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species …" (16 USC 460 k-1, Refuge Recreation Act). "… the Secretary … may accept and use … real … property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors … "(16 USC 460k, Refuge Recreation Act [16 USC 460k-460k-4], as amended).

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:
Refuge visitors engaging in wildlife observation and photography usually remain in their vehicles and view or photograph the wildlife from county roads adjacent to the refuge boundary or from access roads to the six recreation areas (Riverside, Turkey Flat, Owl Cove, Pitts' Creek, Lakeview and McClure) and parking lots on the refuge. Visitors are allowed to walk into the refuge from the recreation area parking lots year-round, and boat on refuge waters between March 15 and

October 14 for viewing and photographing wildlife during daylight hours. Public entry is not allowed on the southwest one-third (Cheyenne Point area) of the refuge. An observation deck and kiosk with interpretive displays located at the headquarters, an interpreted trail with a boardwalk, photo blind, and observation deck with spotting scopes overlooking a moist soil area off of Highway 33, and an observation tower at the Owl Cove Recreation Area are available for viewing wildlife. Deer hunting blinds are available for use by photographers and wildlife observers outside the deer hunting season.

Availability of Resources:
Administering wildlife observation and photography on the refuge requires approximately 200 staff hours. Costs for postage, telephone and facsimile transmissions are approximately $400 per year. Costs for duplicating brochures are approximately $200 per year.

Anticipated Impacts of the Use:
Wildlife observation and photography activities have very little adverse impact on refuge wildlife, lands or facilities. Some birds or terrestrial wildlife may be disturbed by the visitors' presence, but typically can move a short distance to an undisturbed area.

Public Review and Comment:
This compatibility determination is available for public review and comment with the Draft Comprehensive Conservation Plan and Environmental Assessment for Washita and Optima National Wildlife Refuges. The Service will respond to any substantive public comments received.

Determination (check one below):
___ Use is Not Compatible
X Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:
Current restrictions on time and location of access should be sufficient to assure compatibility.

Justification:
Wildlife observation and photography are priority, wildlife dependent public uses of National Wildlife Refuges. Appropriately regulated, they are fully compatible with the refuge purposes. The public should gain a greater appreciation of wildlife and the refuge through opportunities to view and photograph wildlife in its natural habitat.

Signature: Refuge Manager _____
(Signature and Date)

Concurrence: Regional Chief _____
(Signature and Date)

Mandatory 15-year Re-Evaluation Date: **2022**

Draft Compatibility Determination

Use:
Agriculture – farming and chemical weed management

Refuge Name:
Optima National Wildlife Refuge

County:
Texas County, Oklahoma

Establishing and Acquisition Authority(ies):
The Optima National Wildlife Refuge was established under provisions of the Fish and Wildlife Coordination Act (16 USC 664) on March 24, 1975. A formal cooperative agreement between the Department of the Army and the Department of the Interior transferred primary administration of federal lands totaling 4,333 acres on the Coldwater Creek arm of the Optima Reservoir project to the U.S. Fish and Wildlife Service.

Refuge Purpose(s):
The refuge "shall be administered by him [Secretary of the Interior] directly or in accordance with cooperative agreements … and in accordance with such rules and regulations for the conservation, maintenance and management of wildlife, resources thereof, and its habitat thereon, …" (16 USC 664, Fish and Wildlife Coordination 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:

Approximately 240 acres of croplands on the Optima National Wildlife Refuge are farmed to provide food for wildlife. Although the ratio varies somewhat from year to year, refuge staff farms approximately 10 percent of the acreage and the balance is cooperatively farmed by one or more area farmers operating under agreements with the refuge. Annual Cooperative Farming Agreements list acres farmed by each cooperator, crop division percentages or acres, and special conditions to be followed. An agreement is signed each year by each cooperator.

Farming has been a part of the habitat management program at Optima National Wildlife Refuge since its establishment to provide food for wildlife. Winter wheat is the primary crop grown. It was anticipated that Optima Reservoir would attract a large number of waterfowl. The lake never filled to conservation pool level and the population of waterfowl was never realized. Some migratory mourning doves use the fields, and resident wildlife, including deer, turkey, pheasant,

bobwhite and scaled quail, and rabbit use the crops as food and/or cover. Many species of songbirds have also been observed on the fields.

Dryland farming practices are used. Low rainfall, combined with high evapo-transpiration rates, are limiting factors for crop production. Cropland acreage is left fallow on a rotating basis to build up soil moisture. The sand silt soils are highly erodible. The cooperators are asked to use "soil saving" equipment, including sweep type stubble mulch plows.

Both the cooperators and refuge staff use some chemical herbicides to control of weeds, but chemical application is limited to prevent harm to wildlife using refuge farmed land. All chemical use will be pre-approved through the Pesticide Use Proposal process. Service policy requires that only minimal amounts of chemicals are used on refuge lands.

Availability of Resources:
Adequate funding, farm implements and staff are available. Annual plantings of force account crops are a minor effort during late summer or fall. Actual planting typically requires 60 staff hours, and equipment maintenance requires and additional 60 hours and $800 per year. Administering the Annual Cooperative Farming Agreements requires 24 staff hours each year.

Anticipated Impacts of the Use:
The agricultural activities on Optima National Wildlife Refuge provide positive impacts to the refuge. The green browse and grain provided by the croplands attracts and feeds a large variety of wildlife. Land tillage increases the chances of soil erosion. Some herbicides for broadleaf weed control may be used occasionally. The chemicals used are non-toxic to birds, mammals, insects and invertebrates.

Public Review and Comment:
This compatibility determination is available for public review and comment with the Draft Comprehensive Conservation Plan and Environmental Assessment for Washita and Optima National Wildlife Refuges. The Service will consider all substantive comments received.

Determination (check one below):
___ Use is Not Compatible
X Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:
The annual issuance of cooperative farming agreements that include special conditions for conducting the activity, along with routine inspections of the fields to insure compliance with the terms of the agreements, will ensure that compatibility is maintained. The use of minimum tillage equipment will help reduce soil losses through erosion. Benefits and requirements of agriculture on the refuge will be evaluated annually, and modifications to the program, including reduction in the number of cultivated acres, will be made as necessary. Service policy, directives and instructions in the Refuge Manual require reporting on farming, chemical weed management and haying activities.

Justification:
The agricultural program supports the refuge purposes by providing grain and forage for wildlife and by adding variety to the refuge habitat management program. The acreage farmed by cooperators greatly reduces the budgetary and manpower requirements that would be needed if the refuge force account farmed all of the cropland.

Signature: Refuge Manager _____
(Signature and Date)

Concurrence: Regional Chief _____
(Signature and Date)

Mandatory 10-year Re-Evaluation Date (for uses other than the six-priority wildlife dependent public uses): 2017

Draft Compatibility Determination

Use:
Big game hunting, deer and turkey

Refuge Name:
Optima National Wildlife Refuge

County:
Texas County, Oklahoma

Establishing and Acquisition Authority(ies):
The Optima National Wildlife Refuge was established under provisions of the Fish and Wildlife Coordination Act (16 USC 664), Migratory Bird Conservation Act (16 USC 715d), and the Refuge Recreation Act (16 USC 460 k-1). A formal cooperative agreement between the Department of the Army and the Department of the Interior transferred primary administration of federal lands totaling 4,333 acres on the Coldwater Creek arm of the Optima Reservoir project to the U.S. Fish and Wildlife Service.

Refuge Purpose(s):
The refuge "shall be administered by him [Secretary of the Interior] directly or in accordance with cooperative agreements … and in accordance with such rules and regulations for the conservation, maintenance and management of wildlife, resources thereof, and its habitat thereon, …" (16 USC 664, Fish and Wildlife Coordination Act).

Description of Use:
The proposed use is a continuation of the big game hunting program at the Optima National Wildlife Refuge at the current level of use. The hunting program for deer and turkey was initiated in 1986 to provide the public with outdoor recreational opportunities. Deer and turkey hunting is allowed during the fall seasons with archery equipment only. Spring turkey hunting is allowed with shotguns and archery equipment. Usually about 300 visits are recorded for the fall archery deer and turkey seasons. About 50 visits are recorded for the spring turkey season.

Availability of Resources:
Adequate funding and staff are available. Administering the hunt requires 40 hours of staff time.

Anticipated Impacts of the Use:
The impacts of the big game hunt program are minimal. Few violations of refuge hunting regulations have been recorded. Maintenance of the parking areas and leaflet dispensers requires only a minimal effort of refuge staff. The numbers of animals taken have a very small impact on the overall continental populations.

Public Review and Comment:
This compatibility determination is available for public review and comment with the Draft Comprehensive Conservation Plan and Environmental Assessment for the Washita and Optima

National Wildlife Refuges. The Service will respond to any substantive public comments regarding this use.

Determination (check one below):
___ Use is Not Compatible
X Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:
The current procedures for operating the hunt and the rules, regulations and special conditions governing the hunt are sufficient to ensure compatibility. Due to the limited amount of available habitat, and the stable populations of game animals, the method of take (archery for deer and turkey in the fall, and shotgun only for spring turkey) must not be changed without a detailed impact assessment. Law enforcement patrols are conducted to assure hunter compliance with hunting regulations.

Justification:
Hunting is one of the six priority wildlife dependent public uses of National Wildlife Refuges. When compatible, it should be offered. Deer and turkey hunts are consistent and compatible with the purposes for which the Optima National Wildlife Refuge was created.

Signature: Refuge Manager _____
(Signature and Date)

Concurrence: Regional Chief _____
(Signature and Date)

Mandatory 15-year Re-Evaluation Date: **2022**

Draft Compatibility Determination

Use:
Hunting upland game (pheasant, quail and rabbit) and migratory birds (dove)

Refuge Name:
Optima National Wildlife Refuge

County:
Texas County, Oklahoma

Establishing and Acquisition Authority(ies):
The Optima National Wildlife Refuge was established under provisions of the Fish and Wildlife Coordination Act (16 USC 664), Migratory Bird Conservation Act (16 USC 715d), and the Refuge Recreation Act (16 USC 460 k-1). A formal cooperative agreement between the Department of the Army and the Department of the Interior transferred primary administration of federal lands totaling 4,333 acres on the Coldwater Creek arm of the Optima Reservoir project to the U.S. Fish and Wildlife Service.

Refuge Purpose(s):
The refuge "shall be administered by him [Secretary of the Interior] directly or in accordance with cooperative agreements … and in accordance with such rules and regulations for the conservation, maintenance and management of wildlife, resources thereof, and its habitat thereon, …" (16 USC 664, Fish and Wildlife Coordination 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:
The proposed use is a continuation of the existing upland game and migratory bird hunting programs on the Optima National Wildlife Refuge. This use was initiated in 1983. Usually about 300 upland game and dove hunting visits to the refuge are recorded each year.

Availability of Resources:
Adequate funding and staff are available to administer this hunt.

Anticipated Impacts of the Use:
The impacts of the upland game and migratory bird hunt program are minimal. Few violations of refuge hunting regulations have been recorded. Maintenance of the parking areas and posting of the season dates requires only a small portion of the station staffing and budget. The pheasant, quail, rabbit and dove populations are sufficient to provide a harvestable surplus. The numbers of birds and rabbits taken have a small impact on the overall national populations.

Public Review and Comment:
This compatibility determination is available for public review and comment with the Draft Comprehensive Conservation Plan and Environmental Assessment for the Washita and Optima National Wildlife Refuges. The Service will respond to any substantive public comments regarding this use.

Determination (check one below):
___ Use is Not Compatible
X Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:
The current procedures for operating the hunt and the rules, regulations and special conditions governing the hunt are sufficient to ensure compatibility. Laws enforcement patrols are conducted to assure compliance with hunting regulations.

Justification:
Hunting is one of the six priority wildlife-dependent public uses of National Wildlife Refuges. When compatible with the refuge purposes, hunting should be offered.

Signature: Refuge Manager _____
(Signature and Date)

Concurrence: Regional Chief _____
(Signature and Date)

Mandatory 15-year Re-Evaluation Date: **2022**

Draft Compatibility Determination

Use:
Wildlife observation and photography

Refuge Name:
Optima National Wildlife Refuge

County:
Texas County, Oklahoma

Establishing and Acquisition Authority(ies):
The Optima National Wildlife Refuge was established under provisions of the Fish and Wildlife Coordination Act (16 USC 664), Migratory Bird Conservation Act (16 USC 715d), and the Refuge Recreation Act (16 USC 460 k-1). A formal cooperative agreement between the Department of the Army and the Department of the Interior transferred primary administration of federal lands totaling 4,333 acres on the Coldwater Creek arm of the Optima Reservoir project to the U.S. Fish and Wildlife Service.

Refuge Purpose(s):
The refuge "shall be administered by him [Secretary of the Interior] directly or in accordance with cooperative agreements … and in accordance with such rules and regulations for the conservation, maintenance and management of wildlife, resources thereof, and its habitat thereon, …" (16 USC 664, Fish and Wildlife Coordination 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:
Wildlife observation and photography have been allowed at Optima National Wildlife Refuge since its establishment in 1975. Refuge visitors engaging in wildlife observation and photography usually remain in their vehicles and view or photograph the wildlife from county roads adjacent to the refuge boundary. Visitors are allowed to walk into the refuge to view or photograph wildlife during daylight hours. A grove of mature cottonwood trees along the mostly dry channel of Coldwater Creek attracts a variety of birds and provides cover for deer and other wildlife. The short-grass, mixed-grass and sage brush prairie areas provide unique habitats on the refuge. Rates of refuge visitation for wildlife observation and photography have been very low.

Availability of Resources:
Administering wildlife observation and photography on the refuge requires approximately 16 staff hours. Costs for postage, telephone and facsimile transmissions are approximately $20 per year. Costs for duplicating brochures are approximately $20 per year.

Anticipated Impacts of the Use:
Wildlife observation and photography activities have very little adverse impact on refuge wildlife, lands or facilities. Some birds or terrestrial wildlife may be disturbed by the visitors' presence, but typically can move a short distance to an undisturbed area.

Public Review and Comment:
This compatibility determination is available for public review and comment with the Draft Comprehensive Conservation Plan and Environmental Assessment for Washita and Optima National Wildlife Refuges. The Service will respond to any substantive public comments received.

Determination (check one below):
___ Use is Not Compatible
X Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:
Current restrictions on time and location of access should be sufficient to assure compatibility.

Justification:
Wildlife observation and photography are priority wildlife dependent public uses of National Wildlife Refuges. Appropriately regulated, they are fully compatible with the refuge purposes. The public should gain a greater appreciation of wildlife and the refuge through opportunities to view and photograph wildlife in its natural habitat.

Signature: Refuge Manager _____
(Signature and Date)

Concurrence: Regional Chief _____
(Signature and Date)

Mandatory 15-year Re-Evaluation Date: **2022**

APPENDIX K

WASHITA/OPTIMA NWR COMPLEX

REFERENCES CITED

American Ornithologists' Union (AOU), Committee on Classification and Nomenclature. 1983. Check-list of North American Birds. Sixth Edition. American Ornithologists' Union, Allen Press, Inc., Lawrence, Kansas.

American Ornithologists' Union (AOU). 1998. Check-list of North American birds. Seventh edition. American Ornithologists' Union, Washington, DC. 829 pp.

Andrews, R. and R. Righter. 1992. Colorado birds. Denver Mus. Natur. Hist., Denver, CO. 442 pp.

Barta, S., S. Trzebiatowski, S. Ralstin, A. Woodruff, R. Wright, M. Weber, and M. Woods. 2002. A Summary of Economic Conditions in Blaine, Custer and Dewey Counties, Oklahoma. Oklahoma Cooperative Extension Service, Oklahoma State University. 73 pp.

Brown, David E (1989): Arizona Game Birds. The University of Arizona Press and The Arizona Game and Fish Department, Tucson.

Burt, W.H. and R.M. Grossenheider, 1976. A Field Guide to the Mammals. Houghton Mifflin Co. Boston.

Carter, M.F., W.C. Hunter, D.N. Pashley, and K. V. Rosenberg, 2000. Setting Conservation priorities in the United States: Partners in Flight Approach. The Auk: 117(2):541-548.

Chandler, C., Cheney, P., Thomas, P. Trabaud, L. And Williams, D. 1983. Fire in Forestry. Volumes 1 and 2. New York; Wiley

Clark, Tim W., et al., 1982. Prairie Dog Colony Attributes and Associated Vertebrate Species. Great Basin Naturalist, Vol.42(4). pp.572-582.

Coffin, D. P. and W. K. Lauenroth. 1989. The spatial and temporal variability in the seed bank of a semiarid grassland. American Journal of Botany 76(1):53-58.

Collar, N.J., Gonzaga, L.P., Krabbe, N., o Nieto, A., Naranjo, L.G., Parker (III), T.A., and Wege, D.C. 1992.••Madro *Threatened Birds of the Americas.* The ICBP/IUCN Red Data Book. ICBP (now BirdLife International), Cambridge.

Collar, N.J., Crosby, M.J., and Stattersfield, A.J. 1994. *Birds to Watch 2.* The World List of Threatened Birds. BirdLife International, Cambridge.

Colvin, B. A. 1980. Feeding strategy and habitat requirements of the barn owl in Ohio. John Carroll University, Cleveland, Ohio. M.S. thesis. 97 pp.

Colvin, B. A., P. L. Hegdal, and W. B. Hackson. 1984. A comprehensive approach to research and management of common barn owl populations. Pages 270-82 in W. C. McComb (editor). Proceeding of workshop of management of nongame species and ecological communites. University of Kentucky, Lexinton, Kentucky.

Dai, X., Boutton, T. W., Hailemichael, M., Ansley, R. J., Jessup, K. E. 2006. Soil Carbon and Nitrogen Storage in Response to Fire in a Temperate Mixed-Grass Savanna. J Environ Qual. 35: 1620-1628.

Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, P. A. Rabie, and B. R. Euliss. 1999. Effects of management practices on grassland birds: Ferruginous Hawk. Northern Prairie Wildlife Research Center, Jamestown, ND. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. http://www.npwrc.usgs.gov/resource/literatr/grasbird/ferhawk/ferhawk.htm (Version 17FEB2000).

DeGraaf, R.M. and Rappole, J. H. 1995. Neotropical Migratory Birds, (Natural History, Distribution, and Population Change) Comstock Publishing Associates, a Division of Cornell University Press, Ithaca and London.

Dehoyo, J. And Elliot, A. 2000. Status and Conservation Action Plan Whooping Crane *(Grus americana*). Summary. in Handbook of the Birds of the World:Volume 3. eds. Lynx edition and the ICBP Barcelona. Section 1.5, Conservation Status. http://www.portup.com/~nacwq/whooping.htm#priority

Dixon, Charles and James E. Knight 1993. Scaled Quail Habitat Management, Guide L-304. College of Agriculture and Home Economics, New Mexico State University. http://www. Cahe.nmsu.edu/pubs/-I/I-304.html

Ehrlich, Paul R., D.S. Dobkin and D. Wheye. 1988. The Birders Handbook: a Field Guide to the Natural History of North American Birds. Simon and Schuster.

Felske, B.E. 1971. The population dynamics and productivity of McCown's Longspur at Matador, Saskatchewan. M.S. thesis. University of Saskatchewan, Saskatoon, Saskatchewan. 133 pp.

Finch, Deborah M. August 1992. Threatened, Endangered, and Vulnerable Species of Terrestrial Vertebrates in the Rocky Mountain Region. USDA Forest Service General Technical Report RM-215

Flather, C. H. and H. K. Cordell. 1995. in: *Wildlife and recreationists, coexistence through management and research*. R. L. Knight and Devin JU. Gutzwiller, eds. Island Press: Washington, D.C. pp 1-16.

Forman, R. T. T., D. Sperling, J. A. Bissonette, A. P. Clevenger, C. D. Cutshall, V. H. Dale, L. Fahrig, R. France, C. R. Goldman, K. Heanue, J. A. Jones, F. J. Swanson, T. Turrentine, and T. C. Winter. 2003. *Road ecology: science and solutions.* Island Press: Washington, D.C.,

Graul, W.D. and L.E. Webster. 1976. Breeding status of the Mountain Plover. Condor 78.

Graul, W.D. 1975 Breeding biology of the Mountain Plover. Wilson Bull. 87:6-31

Hall, D. L. 1990. Species diversity and mammalian succession in CPR grasslands. Unpublished research report. 34 pp.

Hanson, H.C. Fire in land use and management. Am. Midland Naturalist 21: 415-434.

Hawks Aloft, Inc. 2000. Nesting, Productivity, and food habits of Ferruginous Hawks as a function of prairie dog towns in central, western and northwestern New Mexico. Unpublished report for the Bureau of Land Management, Socorro and Farmington District Offices and New Mexico Department of Game and Fish.

Henson, O.G. 1978. Soil Survey of Custer County, Oklahoma. USDA–Soil Conservation Service.

Higgins 1984 - USFWS Fire Report

Hubbard, J.P. 1978. Revised check-list of the birds of New Mexico. New Mexico Ornithological Society, Publication No. 6

_____.1985. Least tern (*Sterna antillarum*). New Mexico Department of Game and Fish, Handbook Spec. End. In New Mexico BIRD/LA/ST/AN:1-2;

Inklely, D.B., M.G. Anderson, A. R. Blaustein, V. R. Burekett, B. Felzer, B. Griffith, J. Price, and T. L. Root. 2004. Global climate change and wildlife in North America. Wildlife Society Technical Review 04-02. The Wildlife Society, Bethesda, Maryland, 26 pp.

Jackson, W. 1980. *New Roots for Agriculture.* University of Nebraska Press, Lincoln, NE.

Knopf, F.L., and B.J. Miller. 1994. *(Charadrius montanus)*--montane, grassland, or bare-ground bird? Auk 111:504-6.

Knopf, F.L. 1996. Mountain Plover *(Charadrius montanus)*. In A. Poole and F. Gill, editors. The Birds of North America, No. 211. The Academy of Natural Sciences, Philadelphia, and The American Ornithologists' Union, Washington, DC. 16 pp.

Knowles, C.J., C.J. Stoner, and S.P. Gieb. 1982. Selective use of black-tailed prairie dog towns by Mountain plovers. Condor 84:71-74.

Kotiliar, N.B., B.W. Baker, A.D. Whicker, and G. Plumb. 1999. A critical review of assumptions about the prairie dog as a keystone species. Environmental Management 24

Kuchler, A.W., 1964. *Potential Natural Vegetation of the Coterminous United States.* Special Publication 36, American Geographical Society, Washington, D.C.

Lauenroth, W.K. and D. G. Milchunas. 1992. The shortgrass steppe. pp 183-226 In Ecosystems of the World Vol. 8A, Natural Grasslands (R.T. Coupland, ed.). Elsevier Scientific Press, Amsterdam.

Lauenroth, W. K., D. G. Milchunas, J. L. Dodd, R. H. Hart, R. K. Heitschmidt, and L. R. Rittenhouse. 1994. Effects of grazing on ecosystems of the Great Plains. pp 69-100. In M. Vavra, W. A. Laycock, and R. D. Pieper (eds.) Ecological implications of livestock herbivory in the West. Society for Range Management. 297 p.

Lee, Wendy Smith. 1986. The National Wildlife refuge System in Audubon Wildlife Report 1986. Pp. 424 - 425. National Audubon Society, 950 Third Avenue, Ney York, NY 10022.

Lewis, J.C. 1995. Whooping crane *in* The Birds of North America, No. 153. Academy of Natural Sciences, Philadelphia, PA and American Ornithologists' Union, Washington, D.C. 28 pp.

Mack, R. N. and J. N. Thompson. 1982. Evolution in steppe with few large, hooved mammals. Am. Nat. 119:757-773.

Marti, C. D., and P. W. Wagner. 1985. Winter mortality in common barn-owls and its effect on population density and reproduction. Condor 87:111-115.

Meinders, H.C. et al. 1961. Soil Survey of Texas County, Oklahoma. USDA–Soil Conservation Service.

Milchunas, D. G. and W. K. Lauenroth. 1992. Carbon dynamics and estimates of primary production by harvest, 14C dilution, and 14C turnover. Ecology 73:593-607.

Milchunas, D. G., W. K. Lauenroth, P. L. Chapman, and M. K. Kazempour. 1990. Community attributes along a perturbation gradient in a shortgrass steppe. J. Veg. Sci. 1:375-384.

National Geographic Society. 1999. Field Guide to the Birds of North America, Third Edition.

Nolte, K. R. and T. E. Fulbright. 1996. Nesting ecology of scissor-tailed flycatchers in south Texas. Wilson Bulletin 108:302-316.

Oberholser, H.C. 1974. The Bird Life of Texas, Vol.2. Univ. of Texas Press, Austin, TX 537pp.

Oklahoma Almanac. 2005. "Wildlife and nature." http://www.odl.state.ok.us/almanac/2005/17-wildlfe.pdf.

ODWC. Undated. http://www.wildlifedepartment.com/optima.htm.

ODWC. Undated. http://www.wildlifedepartment.com/publications/lizard.htm.

Olendordorff , R.R. 1993. Status, biology and management of ferruginous hawks: a review. Raptor Research and Technological Assistance Center Special Report. U.S. Department of Interior, Bureau of Land Management : Boise, ID

Omernik, J.M. 1987. "Ecoregions of the Coterminous United States. Annual of the Association of American Geologists, 77(1):118-125.

Overmire, T.G. 1962. Nesting of the Bell's Vireo in Oklahoma. Condor 64:75.

Peterson, R.T. 1961. A Field Guide to Western Birds. Houghton Mifflin Co. Boston.

Prescott, D. R. C., and G. M. Wagner. 1996. Avian responses to implementation of a complementary/rotational grazing system by the North American Waterfowl Management Plan in southern Alberta: the Medicine Wheel Project. Alberta North American Waterfowl Management Plan Centre. NAWMP-018. Edmonton, Alberta. 24 pp.

Regosin, J. V. 1994. Scissor-tailed flycatchers eject brown-headed cowbird eggs. Journal of Field Ornithology 65:508-511.

Root, T. 1988. Atlas of Wintering North American birds. University of Chicago Press, Chicago, lL. 312pp.

Rosenburg, C. P. 1986. Barn owl habitat and prey use in agricultural eastern Virginia. College of William and Mary, Williamsburg, Virginia. M.S. thesis. 114 pp.

_____. 1992. Barn owl, *(Tyto alba)*. Pages 253-279 in K. J. Schneider and D. M. Pence, editors. Migratory nongame birds of management concern in the Northeast. U.S. Fish and Wildlife Service, Newton Corner, Massachusetts. 400 pp.

Sauer, C. O. 1950. Glassland climax, fire and man. J. Range Manage. 3 (1) :16-21.

Sauer, J.R., G. Peterjohn, S. Schwartz, and J.E. Hines. 1995. *The Grassland Bird Home Page. Version 95.0 Patuxent Wildlife Research Center, Laurel, MD*

Schmutz, J.K. 1984. Ferruginous and Swainson's hawk abundance and distribution in relation to land use in southeastern Alberta. Jour. Wildl. Manage. 48.1180-1187.

Smith, F. 1977. A short review of the status of riparian forests in California. IN Riparian forests in California: their ecology and conservation. A. Sands, ed. Institute for Ecology Publication 15, 122 p

Stebbins, Robert C. 1985. A Field Guide to Western Reptiles and Amphibians. Houghton Mifflin Co. Boston.

Stewart, R.E. 1975. Breeding birds of North Dakota. Harrison Smith, Lund Press, Minneapolis, Mn 295pp.

Stoddart, Lawrence A. and Arthur D. Smith. 1955. Range Management. McGraw-Hill Book Co., Inc. New York City.

Sutton, G.M. 1967. Oklahoma birds. Univ. of Oklahoma Press, Norman, OK. 674 pp.

Terres, J,K,. 1980. The Audubon Society Encyclopedias of North American Birds. Alfred A. Knopf, New York, NY.

Texas Parks and Wildlife Department. 2000. Wildlife Fact Sheets.
http://www.tpwd.state.tx.us/nature/wild/birds/htm
http://www.tpwd.state.tx.us/nature/wild/animals/htm
http://www.tpwd.state.tx.us/nature/wild/reptiles/htm
http://www.tpwd.state.tx.us/nature/endang/animals/htm
http://www.tpwd.state.tx.us/nature/wild/mammals/rtail.htm

Udvardy, M.D.F. 1977. The Audubon Society Field Guide to North American Birds (Western Region). Alfred A. Knopf, Inc. New York.

U.S. Department of Agriculture. 1997. Texas Agriculture Statistics Service. Census of Agriculture County Profile, Custer, Oklahoma

_____ Pacific Southwest Region, 1998.
http://sv0505.r5.fs.fed.us/hawk/html/the_swainson_s_hawk.html

_____. 2002. Census of Agriculture.
http://151.121.3.33:8080/Census/Create_Census_US_CNTY.jsp.

U.S. Department of Commerce, Bureau of Economic Analysis. 2000. Regional Accounts Data: Regional Economic Profile, Custer County, Oklahoma
http://www.bea.doc.gov/bea/regional/reis/ca30/48/ca05_40039.htm

_____. 2000. Regional Accounts Data: Regional Economic Profile, Texas County, Oklahoma
http://www.bea.doc.gov/bea/regional/reis/ca30/48/ca30_40139.htm

U.S. Department of State. 2004. Desertification: Earth's Silent Scourge.
http://usinfo.state.gov/products/pubs/desertific/experience.htm.

U. S Fish and Wildlife Service. 1976. Optima National Wildlife refuge Annual Narrative Report Calendar Year 1976. Optima National Wildlife refuge.

_____1985 *Malheur National Wildlife Refuge master plan and environmental assessment.*

_____ 1988. Least Bell's vireo recovery plan. Portland, Oregon.

_____. 1990. Whooping Crane. http://species.fws.gov/bio_whoo.html

_____. 1993. Washita National Wildlife refuge Annual Narrative Report Calendar Year 1993. Washita National Wildlife refuge.

_____ 1993. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Pacific Coast Population of the Western Snowy Plover. 50 CFR Part 17.
http://endangered.fws.gov/r/fr93493.html

_____ 1994. Optima National Wildlife refuge Annual Narrative Report Calendar Year 1994. Optima National Wildlife refuge.

_____ 1996 Arkansas/Red Rivers Ecosystem Plan 16 pp.

_____ 1999. *An ecosystem approach to conservation.* National Conservation Training Center.

_____ 2001. Optima National Wildlife refuge Annual Narrative Report Calendar Year 2001. Optima National Wildlife refuge.

_____2006. www.fws.gov/arsnew/regmap.cfm?arskey=20346

U.S. Geologic Survey, 2000. Partners in Flight homepage. Physiographic Area Plan (54) Rolling Red Plains. Executive Summary. http://www.blm.gov/wildlife/pl_54sum.htm

_____. Ground water atlas of the United States, Oklahoma and Texas. Http://www.capp.water.usgs.gov/gwa/ch_e/gif/E005.GIF

University of Minnesota. The Raptor Center.
http://raptor.cvm.umn.edu/newwebdev/raptor/rfacts/pfalcon.html
http://www.raptor.cvm.umn.edu/raptor/rfacts/golden.html

Weaver, J.E. and F.W. Albertson. 1944. Nature and degree of recovery of grassland from the Great Drought of 1933 to 1940. Ecol. Monogr. 14:393-479.

Wendorf, F. and J.J. Hester. Late Pleistocene Environments of the Southern High Plains. 1975. Fort Burgwin Research C

Whitson, T.D., L.C. Burrill, S.A. Dewey, D. Cudney, B.E. Nelson, R.D. Lee, R. Parker. 1991 Weeds of the West. Western Society of Weed Science. Pioneer of Jackson Hole, Publ.

With, K.A. 1994. The hazards of nesting near shrubs for a grassland bird, the McCown's longspur. Condor 96:1009-1019. enter, Inc. Southern Methodist University.(pp. 21,41,42,124,126)

World Wildlife Federation. 1997.
htmhttp://sv0505.r5.fs.fed.us/hawk/html/the_swainson_s_hawk.html
http://www.panda.org/resources/publications/species/underthreat/blackcappedvireo.

APPENDIX L

WASHITA/OPTIMA NWR COMPLEX

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