# 5.0 Plan Implementation and Monitoring

This chapter describes the various tools the Refuge will use to implement the management direction presented in this CCP. It describes the personnel and budget needed to fully implement the various biological and visitor services-related projects identified and provides a summary of the Appropriate Refuge Uses and Compatibility policies the Refuge uses to determine whether a use is allowed. This chapter identifies "step-down" management plans and specific projects that will further guide management of the Refuge; it also provides an overview of the various partnerships and other related agreements the Refuge uses to conduct its work. Finally, it provides a monitoring plan to gauge whether the Refuge is achieving the goals and objectives described in Chapter 4: Management Direction, and it provides a description of the processes used to revise this CCP.

## 5.1 Personnel and Budget Needs

### 5.1.1 Personnel

#### 5.1.1.1 Existing Personnel

In fiscal year 2010, Wichita Mountains Wildlife Refuge had a staff consisting of 40 permanent full-time (PFT) employees and approximately 14 temporary seasonal employees, including Student Temporary Employment Program (STEP) and Student Career Experience Program (SCEP) employees and Youth Conservation Corps (YCC) program enrollees (see Table 5-1). In addition, Arduous Duty firefighters are hired as needed to assist with prescribed and wildland fires. The Refuge also maintains approximately 530 volunteers to conduct its work in administration, biology, maintenance, and visitor services.

Table 5-1. Existing Personnel

| Function / Program | Title | Series | Grade | Type |
|---|---|---|---|---|
| Administration | Refuge Manager | 485 | 14 | PFT |
| Administration | Supervisory Refuge Operations Specialist | 485 | 12/13 | PFT |
| Administration | Refuge Operations Specialist | 485 | 5/7/9 | PFT |
| Administration | Administrative Officer | 341 | 11 | PFT |
| Administration | Refuge Program Assistant | 303 | 7 | PFT |
| Administration | Office Clerk | 303 | 5 | PFT |
| Biology | Supervisory Wildlife Biologist | 486 | 12 | PFT |
| Biology | Wildlife Biologist | 486 | 7/9/11 | PFT |
| Biology | Wildlife Biologist | 486 | 9 | PFT |
| Biology | Biological Science Technician | 404 | 7 | PFT |
| Visitor Services | Supervisory Park Ranger | 0025 | 12 | PFT |
| Visitor Services | Park Ranger | 0025 | 5/7/9 | PFT |
| Visitor Services | Environmental Education Specialists (3) | 1701 | 9 | PFT |
| Law Enforcement | Supervisory Park Ranger | 025 | 11 | PFT |
| Law Enforcement | Park Ranger (3) | 025 | 7/9 | PFT |
| Fire Management | Fire Management Officer | 401 | 12 | PFT |
| Fire Management | Assistant Fire Management Officer | 401 | 9/11 | PFT |
| Fire Management | Prescribed Fire Specialist | 401 | 11 | PFT |
| Fire Management | Fire Management Specialist | 401 | 7/9 | PFT |
| Fire Management | Supervisory Forestry Technicians (2) | 462 | 7 | PFT |

| Function / Program | Title | Series | Grade | Type |
|---|---|---|---|---|
| Fire Management | Fire Program Technician | 303 | 6/7 | PFT |
| Fire Management | Forestry Technicians (4) | 462 | 5 | PFT |
| Maintenance | Facility Manager | 1640 | 9/11 | PFT |
| Maintenance | Engineering Equipment Operator | 5716 | 10 | PFT |
| Maintenance | Maintenance Foreman | 4749 | 10 | PFT |
| Maintenance | Maintenance Mechanics (2) | 4749 | 9 | PFT |
| Maintenance | Maintenance Workers (5) | 4749 | 8 | PFT |

#### 5.1.1.2 Additional Personnel Needs

Table 5-2 identifies staff needed, beyond current levels, to fully implement the management direction presented in this CCP.

Table 5-2. Additional Personnel Needs Beyond Current Levels

| Function / Program | Title | Series | Grade | Type |
|---|---|---|---|---|
| Administration | Refuge Program Assistant | 303 | 5/7 | FT Permanent |
| Biology | Wildlife Biologist (2) | 486 | 7/9/11 | FT Permanent |
| Biology | Ecologist | 408 | 7/9/11 | FT Permanent |
| Fire Management | Forestry Technicians/Range Technicians (4)[1] | 462/455 | 4/5 | FT Permanent |
| Law Enforcement | Supervisory Law Enforcement Officer | 025 | 11 | FT Permanent |
| Law Enforcement | Officer (5) | 025 | 5/7/9 | FT Permanent |
| Maintenance | Engineering Equipment Operator | 5716 | 8/9/10 | FT Permanent |
| Maintenance | Maintenance Worker | 4749 | 8/9 | FT Permanent |
| Visitor Services | Park Ranger | 0025 | 5/7/9 | FT Permanent |
| Visitor Services | Environmental Education Specialist | 1701 | 5/7/9 | FT Permanent |

### 5.1.2 Budget

#### 5.1.2.1 Existing Budget

The Refuge's overall budget in fiscal year (FY) 2011 was approximately $4,021,491.00. It consisted of $2,996,357 for general Refuge operations and $1,025,134 for the Fire Management Program. The base funding for Refuge operations was $2,682,542, and an additional $313,815 funded special projects and initiatives, such as invasive species control, deferred maintenance, the Youth Conservation Corps (YCC) Program, volunteers, revenue sharing, and recreational fee funds. The Refuge's Fire Management Program funding consisted of $736,159 in base funding and $288,975 for fuels reduction and other special projects. The Fire Management Program resources based at the Refuge serve as a zone office for all national wildlife refuges in Oklahoma and northern Texas. This CCP only addresses budget and funding needs for general Refuge operations.

[1] Firefighters would serve the Oklahoma and North Texas Fire Management District.

The Refuge also relies heavily on partnerships and volunteers to sustain the level of Refuge operations and services that are currently being provided. In FY 2011, 548 volunteers contributed 14,962 hours to the Refuge operations.

#### 5.1.2.2 Refuge Operations Needs System

The Refuge Operations Needs System (RONS) is the mechanism that the Refuge uses to justify needed funds and personnel for new programs and projects necessary to meet legal mandates, Refuge plans, and Departmental and Service directives. This database is used by all refuges to compete for dollars needed to adequately fund programs. The needs currently listed in the Wichita Mountains Wildlife Refuge's RONS database date back to 1994. There are 13 projects totaling $1,817,976 for first year start-up costs and $1,033,911 in recurring base costs. Seven of the 13 projects include staff positions. Additional RONS projects will be submitted for funding to achieve the management direction identified in this CCP.

#### 5.1.2.3 Service Asset Maintenance Management System

The Service Asset Maintenance Management System (SAMMS) is a database the Refuge uses to document and justify significant maintenance projects and equipment replacement. The Wichita Mountains Wildlife Refuge's SAMMS project list currently has 501 projects identified for a total of over $18,000,000 in deferred maintenance projects. Additional SAMMS projects will be submitted for funding to achieve the management direction identified in this CCP.

## 5.2 Appropriate Refuge Uses and Compatibility

### 5.2.1 Appropriate Refuge Uses

All uses of a national wildlife refuge over which the Service has jurisdiction must be determined to be appropriate under the Appropriate Refuge Uses policy (603 FW 1). If an existing use is not appropriate, the Refuge Manager will deny the use without determining compatibility. An appropriate use of a national wildlife refuge is a proposed or existing use that meets at least one of the four following conditions:

1. The use is a wildlife-dependent recreational use as identified in the National Wildlife Refuge System Improvement Act (Refuge Improvement Act) (i.e., hunting, fishing, wildlife observation and photography, and environmental education and interpretation);
2. The use contributes to fulfilling the refuge purposes, the Refuge System mission, or goals or objectives described in a refuge management plan approved after October 9, 1997, the date the Refuge Improvement Act was signed into law;
3. The use involves the take of fish and wildlife under State regulations;
4. The Refuge manager has evaluated the use following guidelines in the Service Manual 603 FW 1.11 and found it appropriate.

The following uses were determined to not meet the conditions of "appropriate" according to the Appropriate Refuge Uses policy (603 FW 1) for consideration in the compatibility determination process: swimming, horseback riding, geocaching, and pigeon racing.

### 5.2.2 Compatibility

Lands within the Refuge System are different from other multiple use public lands in that they are closed to all public uses unless specifically and legally opened. The Refuge Improvement Act states, "... the Secretary shall not initiate or permit a new use of a Refuge or expand, renew, or extend an existing use of a Refuge, unless the Secretary has determined that the use is a compatible use and that the use is not inconsistent with public safety."

In accordance with the Refuge Improvement Act, the Service has adopted a Compatibility Policy (603 FW 2 of the Service Manual) that includes guidelines for determining if a use proposed on a national wildlife refuge is compatible with the purposes for which the refuge was established. A compatible use is defined in the policy as a proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the Refuge System mission or the purposes of the refuge. Sound professional judgment is defined as a finding, determination, or decision that is consistent with the principles of sound fish and wildlife management and administration, available science and resources (funding, personnel, facilities, and other infrastructure), and applicable laws.

Compatibility determinations are not required for refuge management activities (e.g., conducting bird surveys) except economic activities (e.g., guided tours). Economic uses of a natural resource must contribute to achieving refuge purposes and the Refuge System mission. They are also not required where statute directs mandatory approval of the activity, as in the case of facilities for national defense. If a use is found to be incompatible, the Refuge will follow normal administrative procedures for terminating the use.

Compatibility determinations for existing hunting, fishing, wildlife observation and photography, and environmental education and interpretation must be re-evaluated with the preparation or revision of a comprehensive conservation plan or at least every 15 years. Compatibility determinations for all other uses must be re-evaluated every 10 years or earlier if conditions change or significant new information relative to the use and its effects becomes available. Refuge managers must complete a written compatibility determination for each use, or collection of like-uses, that is signed by the manager and the Regional Refuge Chief.

#### 5.2.2.1 Compatibility Determinations

Appendix F contains 31 compatibility determinations that have been developed as part of this comprehensive conservation planning effort:

- Bicycling
- Bicycling Events
- Bison and Longhorn Auction
- Boating
- Camping
- Commercial Art, Filming, and Photography
- Commercial Fishing Tournaments
- Commercial Interpretive Tours
- Commercial Rock Sports
- Commercial Scuba Instruction
- Environmental Education
- Fishing
- Grazing
- Hiking
- Holy City
- Hunting

- Interpretation
- Jogging and Strenuous Walking
- Mount Baker Repeater
- Photography
- Scuba Diving
- Running Events
- Tree Cutting
- Wildlife Observation
- Job Corps
- Mesonet Weather Station
- Natural Resource Collection
- Picnicking (Including Rental of Boulder Cabin)
- Rock Sports
- Scientific Research
- Visitor Operation of Amateur Radio Equipment

## 5.3 Intra-Service Section 7 (Endangered Species Act Consultation)

An Intra-Service Section 7 consultation was conducted for the implementation of CCP objectives and strategies with the Tulsa Ecological Services Field Office (see Appendix C).

## 5.4 Step-Down Management Plans

Implementation of this CCP will be accomplished, in part, through various step-down management plans. Each step-down plan has its own program focus, identifying and directing the implementation of strategies (i.e., actions, techniques, and tools) designed to achieve programmatic objectives outlined in the plan.

### 5.4.1 Current Step-Down Plans

Current step-down management plans for the Refuge include the following:

***Animal Control Plan, 1987***

This plan's objective is to control problematic plants or wildlife, particularly where they cause impacts or potential impacts to public health and safety, other plants or wildlife, property, or recreation. Control methods include trapping, shooting, and the application of chemicals.

***Aviation Safety and Mishap Prevention Plan, 2008***

This document provides an overview of incident responses, reporting, and investigation techniques; risk management opportunities; and prevention measures for the Refuge. It also provides safety strategies and mitigations such as personal protective equipment (PPE).

***Black-Capped Vireo Recovery Plan, 1996***

This plan discusses population monitoring, habitat manipulation, and brown-headed cowbird management and other recovery actions for the federally endangered black-capped vireo on the Refuge.

***Crowd Control Plan, 1987***

This plan specifies Refuge rules and procedures for managing large, potentially unruly, groups of people. The plan also allows for groups larger than 15 but only with a Special Use Permit issued by the Refuge. The plan's intent was to limit large crowds on the Refuge and manage disorder or emergencies if necessary.

### *Deer Management Plan, 1990*

This plan is intended to provide information for managing herd populations, Refuge-wide distributions, public viewing opportunities, and hunt administration.

### *Disease Management Plan, 2003*

This plan provides guidance for preventing, controlling, or managing wildlife disease on the Refuge, including for bison, longhorn, deer, elk, and saddle horses.

### *Elk Management Plan, 1988*

This plan describes the management of the Refuge's elk population—from habitat conditions to controlling male/female ratios, censusing, and providing supplemental nutrition. The plan also discusses administrative aspects of managing elk.

### *Emergency Action Plan (for five high-hazard dams), 1984-2010*

The purpose of this plan is to reduce the risk of human life loss and injury during an unusual or emergency event at the dams. A secondary purpose of the plan is to minimize the potential for property damage, including damages to properties downstream of the dams.

### *Environmental Management Plan, 2011*

The Environmental Management Plan (EMP) provides a consolidated description of the environmental management system (EMS) in place at Wichita Mountains Wildlife Refuge. The plan presents the field station's environmental management policy, identifies the key environmental aspects and impacts of its operations, and presents goals and targets established to improve the field station's environmental performance.

### *Equipment and Facility Management Plan, 1988*

This plan provides a description of and management for fences, water gaps, gates, cattleguards, corrals, and pastures on the Refuge.

### *Fence Management Plan, 1984*

This plan offers direction for the management of bison and for range management, auction preparation, research, facilities and equipment, and pasture information.

### *Fire Management Plan, 2008*

This plan is designed to fulfill Department and Service requirements that every area with burnable vegetation have an approved Fire Management Plan (FMP), which is reviewed and/or revised at a minimum of five-year intervals or when significant changes are proposed (621 FW 2.3C-4). This plan provides guidance to allow fire to play its ecological role on the Refuge while protecting human life, developments, and cultural resources. It defines a program to manage prescribed fire, preparedness, prevention, and suppression of wildland fire.

### *Fisheries Management Plan, 2002*

This plan contains Refuge fisheries objectives, including providing for recreational use, that involve continuing cooperation with the Oklahoma Department of Wildlife Conservation and Fort Sill (for Lake Elmer Thomas), with technical assistance from Service hatcheries and Regional fisheries biologists, when applicable.

### *Grassland Management Plan, 1985*

The intent of this Grassland Management Plan is to manage grassland resources to sustain herds of bison, elk, deer, and longhorn cattle. This plan reviews past management practices such as fire management, haying, and maintaining carrying capacity, and it assesses conditions (as of 1985). This plan provides management actions to determine proper utilization.

### *Horse Management Plan, 1985*

This plan is the framework that allows the Refuge to maintain a "herd of healthy and cooperative horses" for the working of the Refuge's longhorn and bison herds.

### *Hunt Management Plan, 1984*

This plan established the framework of hunting white-tailed deer on the Refuge through a cooperative agreement between the Oklahoma Department of Wildlife Conservation and the U.S. Fish and Wildlife Service.

### *Interpretive Plan, 1984*

This plan provides goals and objectives for the Refuge's interpretive program, including facilities and activities.

### *Law Enforcement Management Plan, 2009*

This plan provides guidelines to be followed by the Refuge's Law Enforcement (LE) officers based on established legal procedures and Service policy. The objectives of the Law Enforcement program on the Refuge presented in this plan also include the protection of wildlife resources and allowance of appropriate educational and recreational visitor use of Refuge lands.

### *Longhorn Management Plan, 2003*

This plan describes the management of the Refuge's longhorn population—from habitat conditions to controlling male/female ratios, genetics, round-up and auction, and providing supplemental nutrition. The plan also discusses administrative aspects of managing longhorn.

### *Public Use Management Plan, 1998*

This plan provides goals and objectives for the Refuge's overall public use program, including boating, camping, picnicking, hunting, fishing, interpretation, and environmental education and the public use facilities associated with these activities.

### *Quarters Management Plan, 1985*

This plan provides direction on the occupancy and maintenance of government housing on the Refuge.

### *Safety Plan, 2011*

This plan presents the safety communication structure within the Refuge, identifies general and specific hazards, and offers appropriate protective measures.

### *Sign Plan, 1984*

The Sign Plan follows the guidance of the Service Sign Manual. The plan gives general information about Refuge visitation, recreation activities, interpretation, environmental education, facilities, history, and future demands for public use. It describes the signs required,

including Entrance, Guide, Information, Specialty (e.g., traffic control, interpretive, and trail), and standard Service signs such as boundary, area closed, Wilderness, and recreational symbols.

***Search and Rescue Management Plan, 2010***

The purpose of the plan is to establish procedures to be followed in emergency search and rescue situations.

***Spill Prevention, Control, and Countermeasures Plan, 2008***

This plan outlines the procedures, methods, and equipment used at the Refuge to comply with EPA oil spill prevention control and countermeasures standards and inspection, reporting, training, and record keeping requirements found in 40 CFR 112.

***Severe Service Maintenance Plan, 2007***

The main purpose of this plan is to document the level of service provided to the fire engines and pumps at the Refuge. The plan is designed to document the maintenance and inspection processes, the fire support equipment receiving severe service maintenance, and the levels of responsibility for maintaining the equipment.

***Wilderness Management Plan, 1979***

The Wilderness Management Plan helps the Refuge ensure achievement of the long-term Refuge objective of preservation of the wilderness resource; assure adherence to legislation establishing the area as wilderness; and make certain that congressional, Departmental, and Service regulations are followed.

### 5.4.2 Future Step-Down Plans

The following list of step-down management plans will be drafted to guide management of specific Refuge programs:

***Cultural Resources Inventory and Management Plan, 2018***

This plan will address strategies and/or procedures for evaluating, mitigating damage to, and protecting the Refuge's archaeological and historic features and facilities.

***Environmental Management Plan, revised annually***

The Environmental Management Plan (EMP) provides a consolidated description of the environmental management system (EMS) in place at Wichita Mountains Wildlife Refuge. The plan presents the field station's environmental management policy, identifies the key environmental aspects and impacts of its operations, and presents goals and targets established to improve the field station's environmental performance.

***Facility Management Plan, 2015***

This plan will provide a description of and management for offices, Visitor Center, dams, fences, water gaps, gates, cattleguards, corrals, and pastures on the Refuge. It will also address the occupancy and maintenance of government housing on the Refuge.

***Fire Management Plan, 2013***

This plan will fulfill Department and Service requirements that every area with burnable vegetation have an approved Fire Management Plan (FMP) that is reviewed and/or revised at a minimum of five-year intervals or when significant changes are proposed (621 FW 2.3C-4). This

plan will define a program to manage prescribed fire, preparedness, prevention, and suppression of wildland fire.

***Fisheries Management Plan, 2017***

This plan will contain Refuge-wide fisheries management objectives, including providing for recreational use, that involve continuing cooperation with the Oklahoma Department of Wildlife Conservation and Fort Sill (for Lake Elmer Thomas), with technical assistance from Service hatcheries and regional fisheries biologists, when applicable.

***Habitat Management Plan, 2015***

The Habitat Management Plan will describe management of the Refuge's major fauna, including bison, longhorn, elk, and deer, as well as the Refuge's horses. It will assess range conditions and provide direction for future management of Refuge habitats and for genetics, disease control, and the long-term health of the Refuge's fauna.

***Hunt Management Plan, 2013***

This plan is intended to provide information for managing deer and elk herd populations, Refuge-wide distributions, public viewing opportunities, and hunt administration.

***Integrated Pest Management Plan, 2013***

This plan will provide guidelines to manage, reduce, or control invertebrate accidental pests, vertebrate pests, exotic weeds, and native plant pest species on the Refuge.

***Inventory and Monitoring Plan, 2013***

The inventory and monitoring plan will document the status of, assesses the condition of, and detect changes in the Refuge's diverse fish, wildlife, and plant communities, as well as physical resources, including water, air, and soils, and ecological processes in order to support science-based conservation planning and management at multiple spatial scales.

***Land Protection Plan, 2014***

Upon the approval of a Preliminary Project Proposal (PPP) the Refuge will develop a Land Protection Plan (LPP). This plan will identify future expansion opportunities for the Refuge by evaluating land acquisition or other methods to expand the Refuge boundary and/or its conservation footprint.

***Law Enforcement Plan, 2012***

This plan will provide guidelines to be followed by the Refuge's Law Enforcement officers based on established legal procedures and Service policy. The objectives of the Law Enforcement program on the Refuge presented in this plan also include the protection of wildlife resources, allowance of appropriate educational and recreational visitor use of Refuge lands, and methods for crowd control.

***Research Natural Area Plan, within two years of establishment***

This plan will ensure the Refuge achieves the long-term objective of maintenance of a natural area on the Refuge. It will also provide direction on habitat, wildlife, and public use management for the RNA.

***Sign Plan, 2014***

This plan will provide detail on the Refuge's directional, informational, and educational signage in terms of locations, aesthetic qualities, and quantities.

***Spill Prevention Control and Countermeasures Plan, 2014***

This plan will outline the procedures, methods, and equipment used at the Refuge to comply with EPA oil spill prevention control and countermeasures standards and inspection, reporting, training, and record keeping requirements found in 40 CFR 112.

***Transportation Plan, 2013***

This plan will provide final detail on the Refuge's alternative transportation projects intended to link the Refuge to LETRA, provide ADA-accessible facilities at Jed Tower, and improve Meers Road.

***Visitor Services Plan, 2014***

This plan will provide goals and objectives for the Refuge's overall public use program, including wildlife-dependent recreational uses and those supportive of them. It will also provide information on public use facilities and signs.

***Water Resources Management Plan, 2016***

This plan will assess the outcome of the Water Resource Inventory and Assessment to take place on the Refuge and further the information it provides into objectives and strategies for managing the Refuge's surface and groundwater resources.

***Wilderness Stewardship Plan, 2016***

The Wilderness Management Plan will help the Refuge ensure achievement of the long-term Refuge objective of preservation of the wilderness resource; assure adherence to legislation establishing the area as wilderness; and make certain that congressional, Departmental, and Service regulations are followed.

## 5.5 Refuge Projects

The following list of Refuge projects have been identified as needed to fulfill the goals and objectives indentified in Chapter 4: Management Direction.

### 5.5.1 Existing Projects

The Refuge currently engages in the following broad projects. These projects are expected to continue after the CCP is approved.

#### 5.5.1.1 Habitat and Wildlife Projects

***Project 1: Air Quality Monitoring***

Refuge management activities that may affect air quality include prescribed fire, invasive species management, construction and maintenance of roads, and emissions from vehicle exhaust. Prescribed burns are initiated according to an approved Fire Management Plan (2008) that includes smoke management criteria; and burns are implemented according to Oklahoma's Voluntary Smoke Management Guidelines (Oklahoma Forestry Services 2010). The Refuge treats invasive flora and pests wherever they occur throughout the Refuge through chemical and mechanical means. Chemical treatment is applied with a boom or wand. Mechanical treatments,

conducted on a limited basis, are associated with facility or roadway maintenance and habitat management. Other habitat management activities, such as bison and longhorn roundups, are scheduled during periods when negligible fugitive dust is produced. All Refuge roads that are heavily used by the public are paved; most dirt roads are used sporadically by Refuge staff, resulting in low amounts of dust and vehicle emissions. The Refuge coordinates with the Service's Denver Air Quality Branch to ensure appropriate and consistent air quality monitoring at (but not limited to) the IMPROVE station to ensure protection of the Refuge's Class I Airshed status.

***Project 2: Fire Management***

Prescribed burning is initiated according to the Fire Management Plan (2008) with a strategy to manage for or mimic natural fire occurrence and grazing interaction (i.e., pyric herbivory). The goal of the FMP is to promote naturally-occurring and historic habitat conditions to sustain biological diversity and heterogeneity. All wildfires are evaluated and an appropriate strategy and/or tactic is applied that considers wildfire intensity and behavior, public and firefighter safety, values at risk, possible resource benefits, and cost containment. In consultation with the U.S. Fish and Wildlife Service's Ecological Services and in accordance with Section 7 of the Endangered Species Act, the official Biological Opinion identifies that an annual maximum of 7,200 acres of black-capped vireo habitat can be burned. A total of 14,000 acres may be burned per year (a combination of black-capped vireo and non-black-capped vireo habitat).

***Project 3: Invasive Species Control and Restoration using Prescribed Fire***

Currently, the Refuge is burning approximately 7,500-14,000 acres annually using Refuge fire crew and other fire-qualified employees. The Refuge utilizes a larger tract "patch burn" technique on a five-year rotation, in combination with cattle and/or bison grazing and herbicide use for invasive species control. Implementing this project reduces brush and invasive species. In addition, the combination of prescribed fire and grazing helps maintain native prairie habitat.

***Project 4: Invasive and Non-Native Flora Control using Chemical Treatments***

The proliferation of invasive plants may be the single most important issue facing the Refuge today. Without prudent management, invasive plants can outcompete native plants and form monocultures that lack biodiversity. The control of invasive plants on the Refuge takes research, treatment, monitoring, and education to allow for an integrated approach to deal with many of the 37 problem species. The treatment of invasive plants is prioritized according to species and management area. Currently, the Refuge maps and treats small infestations Refuge-wide, primarily along public access roads.

***Project 5: Invasive and Non-Native Fauna***

Non-native animals can have drastic impacts on both native fauna and flora. Feral pigs, cats, dogs, rabbits, etc., have all been released intentionally or accidentally on the Refuge or encroached through the boundary fences. The Refuge strives to alleviate this problem through outreach and monitoring. The removal of these animals is accomplished with live trapping and opportunistic shooting. Additionally, the Refuge's lakes and streams are subject to persistent threat of infestation of aquatic invaders such as zebra mussels. The Refuge monitors its waterbodies for the presence of these invaders.

### *Project 6: Black-Capped Vireo Recovery*

The Refuge supports the largest breeding population of the endangered black-capped vireos in Oklahoma; therefore, this species is a major management consideration. Recovery actions by the Refuge include management of nesting habitat through invasive plant control and prescribed burning, along with trapping and removal of brown-headed cowbirds during vireo nesting season. Population monitoring is accomplished through a spot count survey conducted in May and June.

### *Project 7: Bison Herd Management*

The Refuge manages one of the largest government bison herds in the country. On the Refuge, bison cohabitate with deer, elk, and Texas longhorn. Population size is managed to sustain quality habitat conditions. Annual surveys are used to estimate herd size, sex ratio, and calving rates. In September, a fall roundup is conducted so that excess animals can be culled out of the herd. During processing of the animals, all calves are pit-tagged and sampled (blood and tail hair follicles) for disease and genetics testing. Genetic diversity is one factor used to determine which animals are excised from the herd. Additionally, the age and sex composition of the herd is balanced. A randomized sample of keeper animals are tested for herd health and released. Also, periodic fecal samples are collected throughout the year and tested for parasite loading. In October, the Refuge holds a public auction and sells off the excess bison from the herd.

### *Project 8: Longhorn Herd Management*

The Refuge manages what is considered in the breed to be the oldest true-to-type longhorn herd in existence. Population size and sex ratio are managed to maintain quality habitat conditions. In August, a fall roundup is conducted so that excess animals can be culled out of the herd. The calf crop for the given year is used to determine the number of longhorns to be excessed. Adult bulls and cows are the first to be culled. Calves of the year are then weaned and replacement animals are selected, branded with the WR brand, and released out with the herd. The remaining calves and excessed adults are processed for sale and sold off in September at a public auction. In years with a large number of calves too young to wean in the fall, a smaller spring roundup is conducted, and the calves are sold at a local livestock auction after notification of previously registered buyers.

### *Project 9: Elk Herd Management*

The management of elk population size is critical to avoid habitat degradation and competition with other large mammal populations. Due to terrain and access to areas of high animal concentration, the Refuge elk herd size and sex ratios are estimated through an annual aerial census. Calf production is estimated through an annual ground survey. Using these data, the Refuge elk herd is managed through controlled hunt(s) in partnership with the Oklahoma Department of Wildlife Conservation (ODWC). The hunt drawings are administered by ODWC, and the Refuge administers the hunt(s). Personnel and equipment from both the Refuge and ODWC are used to help conduct the facilitated hunt(s).

### *Project 10: White-Tailed Deer Herd Management*

Without proper management, white-tailed deer can become overpopulated, leading to competition with other ungulates and habitat degradation. Each year, the Refuge conducts a white-tailed deer spotlighting survey to determine estimated population size and buck-doe ratios. These estimates are used to establish harvest goals. The white-tailed deer population is regulated through the use of controlled hunt(s) in partnership with the Oklahoma Department of Wildlife

Conservation (ODWC). The ODWC administers the controlled hunt drawings and participates in the facilitated hunt(s) by providing staff and equipment.

#### 5.5.1.2 Public Use Projects

***Project 11: Wildlife-Dependent Recreation***

The Wichita Mountains Wildlife Refuge provides the public with high quality, diverse public use (recreation) opportunities not found anywhere else in the region. Visitation at the Wichita Mountains Wildlife Refuge over the 10 ten years has averaged about 1.5 million visitors per year, making it one of the most visited national wildlife refuges (U.S. Fish and Wildlife Service 2009). The Refuge provides all six wildlife-dependent recreation uses: hunting (for deer and elk), fishing (on 12 lakes), wildlife observation, photography, interpretation, and environmental education.

***Project 12: Supportive Recreation***

Other recreation activities occur on the Wichita Mountains Wildlife Refuge in support of the six wildlife-dependent public uses: boating, camping, hiking, picnicking, and rock sports. These activities are important forms of recreation and have previously been determined to be compatible with the purpose(s) of the Refuge.

#### 5.5.1.3 Facilities Projects

***Project 13: Public Use Facilities***

Public use facilities include roads, trails, signs, developed picnic and camping sites, the Visitor Center, the Environmental Education Center, fishing piers, boat ramps, and parking lots. The Refuge maintains this infrastructure to facilitate public use on the Refuge.

***Project 14: Administrative Facilities***

The Wichita Mountains Wildlife Refuge Administrative Facilities include the Headquarters Office building; Fire Office building; Fire Cache building; Maintenance Shop; Vehicle, Equipment, and Material Storage buildings; and nine Residential Quarters. The Visitor Center is located at its own separate site near the center of the Refuge and includes office space for the Public Use staff. Currently, residence quarters #8 is being converted to a Law Enforcement office. The Visitor Center initiated a photovoltaic energy project, which should be completed by 2012.

***Project 15: Cultural Resources***

The Refuge conducted a survey in conjunction with the Museum of the Great Plains in 1964 and 1965. Prehistoric and historic sites were examined. Since the 1964-1965 survey, three additional sites have been reported on the Refuge area. The survey of historic structures located in the Refuge area was undertaken by the Oklahoma Historic Preservation Office. Five structures are listed on the National Register of Historic Places, and many others are eligible to be listed. The Refuge coordinates closely with the Oklahoma Archaeological Society, the Oklahoma State Historical Preservation Office, the Service's Region 2 Cultural Resource staff, and several tribes on projects that may have impact on related resources. Coordination and consultation with tribes results in mitigation measures necessary for the Refuge to avoid or minimize adverse impacts to resources.

***Project 16: Holy City***

The Refuge issues a five-year permit with the option of renewal in five-year increments at the Refuge Manager's discretion (not to exceed 25 years) for use of the 65-acre Holy City site. The five-year permit with renewal options allows the Wallock Foundation to maintain a regionally important cultural and historical event and associated facilities, while the Refuge works to protect its natural resources. Holy City is allowed to leave its interpretive brochures at the Refuge's public use facilities for visitor information, and Refuge information brochures are available to Holy City visitors.

Refuge Law Enforcement officers routinely patrol and respond to incidents at the Holy City. Assistance is also provided by the Refuge to plan and coordinate traffic control, parking, Law Enforcement staffing, and domestic animal health certifications in relation to the annual performances and events. Any requests for additional programs or building improvements are first considered by the Refuge Manager.

***Project 17: Job Corps***

The Treasure Lake Job Corps Center (Center) was established in 1965 on approximately 80 acres near the southwest comer of the Wichita Mountains Wildlife Refuge. The purpose of the Job Corps was to provide disadvantaged youth an opportunity for education, vocational training, and useful work experience for the purpose of increasing their employment capability and preparing them for the responsibilities of citizenship. The Center is contracted for 236 students (ages 16-24) and teaches 11 vocational training programs. On January 17, 2010, the administration and operation of the Center was transferred from the Bureau of Reclamation to the U.S. Forest Service.

All land, buildings, structures, and fixtures at the Center remain under the jurisdiction of the Service as part of the Wichita Mountains Wildlife Refuge. The Forest Service is responsible for oversight of the operation of the Center, including utilities, materials, supplies, other goods or services, and administrative support required to carry out the Center functions, activities, and educational and vocational training programs. The Forest Service is also responsible for maintaining all lands and facilities at the Center in a condition that will assure the health and safety of students, employees, and the visiting public.

The Job Corps Center provides service to the community and assists with several projects on the Refuge. One project currently in progress is a masonry cobblestone veneer overlay on the Mt. Scott Radio Repeater Building. Another job recently completed was a small plastering job in the maintenance crew room.

## 5.5.2 Future Projects

### 5.5.2.1 Ecoregion Projects

***Project 18: Air Quality Protection***

This project aims to establish records of baseline data to be used in improving timing, mitigations, and parameters of Refuge management actions for a Class 1 Airshed. The Refuge would also share this data with other entities, including Oklahoma Department of Environmental Quality and the Service's Denver Air Quality Branch. Where appropriate, the Refuge would pursue a strategy of bio-utilization of woody biomass (especially Eastern red cedar) to avoid affecting air quality associated with burning. (This infrastructure is not yet in place; if and when

the opportunity arises, the Refuge would support its partners and participate in this effort.) The Refuge would also work to minimize impacts to air quality caused by prescribed burning or wildfires, fugitive dust, chemical spray, vehicle emissions, and other Refuge activities. The estimated first year and recurring costs would come from administrative outputs only. This project supports achievement of 4.2.1 Goal 1 and Objectives 1 and 2 and consists of specific strategies as identified in Chapter 4: Management Direction.

***Project 19: Water and Fisheries Resource Management***

This project is needed to manage waterbodies on the Refuge for the benefit of megafauna, fisheries, migratory waterfowl, and shorebird species. Water level manipulation, fish passage construction, and water quality monitoring would be implemented to ensure the Refuge is managing water quantity, quality, and dependent species adequately. This project supports achievement of 4.2.1 Goal 1 and Objectives 1, 4, and 5 and 4.3.1 Goal 1 and Objectives 1, 2, 3, and 4 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 19a: Construct Fish Passage Structure at Cache Creek Water Crossing*

Replace or modify existing water crossing so that fish passage up and down Cache Creek is not impaired. Currently this crossing has an approximate four-foot drop-off on the south side of the structure, which hinders aquatic passage unless under flooding conditions. The estimated first-year cost is $250,000, with no recurring cost. This project supports achievement of 4.2.1 Goal 1 and Objective 4 and 4.3.1 Goal 1 and Objectives 1, 2, and 4 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 19b: Maintain and/or Construct Concrete Low Water Crossings*

The Refuge has several concrete low water crossings that were constructed by the Civilian Conservation Corps and Treasure Lake Job Corps to protect riparian resources and prevent or minimize erosion. Many of these structures are in need of repair. This project would repair and maintain existing crossings and construct new ones in areas in need of protection. The estimated first-year cost is $150,000, with $5,000 in recurring costs. This project supports achievement of 4.2.1 Goal 1 and Objectives 4 and 5 and 4.3.1 Goal 1 and Objectives 1, 2, and 4 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 19c: Boat Wash Station*

This project would add a boat wash station at Lake Elmer Thomas to help prevent infestation of invasive plants and zebra mussels. Elmer Thomas is the only lake on the Refuge that allows large boats with gas motors and fishing tournaments, which puts it in a higher risk category for introduction of invasives. Both aquatic plants and mussel veligers (i.e., juveniles that are easily transported) get carried in on boat trailers, live wells, bilge pumps, and in the lower units of outboard motors. Villagers require either a 72- hour drying period or water over 150 degrees Fahrenheit to effectively be killed. The estimated first-year cost is $100,000, with $3,000 in annual recurring costs for its maintenance. This project supports achievement of 4.2.1 Goal 1 and Objectives 4 and 5 and 4.3.1 Goal 1 and Objectives 1, 4, 6, and 9 and 4.4.1 Goal 1 and 4.4.2 Objectives 1 and 7 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 19d: Biologist Position (1FTE)*

A biologist position is needed to manage water and fisheries resources for the wildlife use and public interest. This position would assist in monitoring water quality through the Blue Thumb partnership with the Oklahoma Conservation Commission, mercury monitoring through OKDEQ, the EPA long-term Mercury Deposition Network program, and other partnerships. The position would also be responsible for helping develop a Water Resource Inventory and Assessment to determine the effect of downstream users and drawdown and what effect that might have to Refuge water resources. Also, this position would assist in determining whether the Refuge's water rights are adequate and evaluate the need for increasing water rights. This position would require a vehicle and computer. The estimated first-year cost is $154,000, with a recurring annual cost of $108,000. This project supports achievement of 4.2.1 Goal 1 and Objectives 1, 4, and 5 and 4.3.1 Goal 1 and Objectives 1, 2, 3, and 4 and consists of specific strategies as identified in Chapter 4: Management Direction.

***Project 20: Habitat Corridor Enhancement***

Through this project, the Refuge would seek partnerships and/or land expansion opportunities for extending habitats beyond the Refuge. The focus would be on riparian, grassland, or other valuable habitat areas. This effort is intended to aid in the creation of wildlife corridors between pockets of undeveloped lands and/or lands that provide valuable wildlife habitat.

*Project 20a: Preliminary Project Proposal and Land Protection Plan*

This project would add emphasis on Refuge expansion by developing a Preliminary Project Proposal and, ultimately, a Land Protection Plan to pursue acquisition of adjacent lands or use other means to protect valuable resources adjacent to the Refuge from development and other uses that could render harmful effects on the Refuge. The outcome of this project would allow for protection of more habitats utilized by trust species, increases in their numbers, and population expansions. It would also increase opportunities for wildlife-dependent public uses. The estimated first-year cost is $75,000, with no recurring cost. This project supports achievement of 4.2.1 Goal 1 and Objectives 3 and 4 and 4.3.1 Goal 1 and Objectives 7 and 8 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 20b: Ecologist Position (1FTE)*

An ecologist position would be created to work with partners to develop tactics and outreach for the maintenance of riparian corridors and to work with local landowners to assist in efforts to expand conservation of riparian areas outside of Refuge boundaries. This position would prioritize future protection efforts towards connecting valuable habitat fragments in identified corridors benefiting Federal Trust Species. This position would require a vehicle and computer. The estimated first-year cost is $154,000, with a recurring annual cost of $108,000. This project supports achievement of 4.2.1 Goal 1 and Objectives 3 and 4 and consists of specific strategies as identified in Chapter 4: Management Direction.

#### 5.5.2.2 Habitat and Wildlife Projects

***Project 21: Invasive and Non-Native Management***

*Project 21a: Invasive and Non-Native Flora Management*

This project works to promote the health of native species on the Refuge while containing, controlling, or eradicating non-native or invasive flora when and where possible. Invasive and

non-native flora would be mapped and treated through a variety of methods (to be covered in the 2013 IPMP) to reduce or eliminate their populations and/or spread. As areas of infestations are reclaimed, habitat will be restored back to native vegetation. This is a Refuge-wide project. The estimated first-year cost is $80,000, with a recurring annual cost of $42,000. This project supports achievement of 4.3.1 Goal 1 and Objective 6, and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 21b: Invasive and Non-Native Fauna Management*

This project works to promote the health of native species on the Refuge while containing, controlling, or eradicating non-native or invasive fauna, such as feral hogs, when and where possible. Invasive and non-native fauna populations would be reduced through trapping or gunning (to be covered in the 2013 IPMP) or prevented by implementing restrictions aimed to avert introductions. Longhorn populations would be evaluated to determine population targets. This is a Refuge-wide project. The estimated first-year cost is $50,000, with a recurring annual cost of $20,000. This project supports achievement of 4.3.1 Goal 1 and Objective 9, and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 21c: Old World Bluestem Research*

Develop and fund a research partnership to study the effectiveness of varied treatments on the control of Old World bluestem in native mixed-grass prairie. Old World bluestem in a hardy non-native grass species that is outcompeting native species throughout the State and is threatening to disrupt the native ecosystems on the Refuge. This project would most likely be a three-year project with an estimated cost of $75,000 annually. This project supports achievement of 4.3.1 Goal 1 and Objective 6 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 21d: Biologist Position (1FTE)*

Invasive flora and fauna are becoming an ever-increasing threat to native wildlife species both on and off the Refuge. A biologist position is needed to continue and increase prevention measures, develop a volunteer program to map occurrences, and work towards establishing a working group (i.e., Cooperative Weed Management Area) to evaluate invasive threats to the Wichita Mountains ecosystem; develop partnerships with local, State, and Federal agencies to collectively work toward control efforts; and create and distribute invasive plant educational materials to the public. This position would require a vehicle and computer. The estimated first-year cost is $154,000, with a recurring annual cost of $108,000. This project supports achievement of 4.3.1 Goal 1 and Objectives 6 and 9, and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 21e: Native Grass Revegetation Equipment*

This project would allow the Refuge to reduce invasive flora encroachment by acquiring equipment needed to harvest and replant seed from native grasses on the Refuge. This would allow harvest of local native seed sources and their use to aid in rehabilitation and re-seeding of disturbed sites to enhance recovery of native plants and alleviate opportunities for infestations of invasive plants. This project requires a native seed harvester and a no-till drill. The estimated first-year cost is $28,450, with $3,000 in annual recurring costs for maintenance and operations. This project supports achievement of 4.2.1 Goal 1 and Objective 4 and 4.3.1 Goal 1 and Objective 6, and consists of specific strategies as identified in Chapter 4: Management Direction.

***Project 22: Native Grazer Enhancement***

This project aims to manage bison and elk in terms of sufficient habitat, forage, and population size. The Refuge would monitor forage, disease, and genetics to maximize the health and vigor of these herds. This project supports achievement of 4.3.1 Goal 1 and Objective 7 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 22a: Corral Modifications and Improvements*

This project would allow the Refuge to better and more safely handle management of an increased bison herd under the U.S. Department of the Interior (DOI) Bison Initiative model. Modification of the existing corrals would provide for safer handling of adult bison for both the employees and bison alike by the strategic addition of catwalks where there are none, steel plating pens with woven wire, canopy over the chute working area, and the addition of pens suited for adult animals. This project supports achievement of 4.3.1 Goal 1 and Objectives 7 and 9 and consists of specific strategies as identified in Chapter 4: Management Direction. (See Project 26b)

*Project 22b: Herd Health and Genetics Testing*

The Refuge manages its bison herd for genetic diversity under the DOI Bison Initiative model. This project would allow the Refuge to continue to increase and improve genetic monitoring, as techniques are developed, and test for basic animal health and parasite loading. The estimated recurring annual cost is $20,000 per year. This project supports achievement of 4.3.1 Goal 1 and Objective 7 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 22c: Consolidating Pastures and Moving Fence Lines*

In an effort to reduce habitat fragmentation on the Refuge, and in communication with Refuge grazing permitees, the Refuge would consolidate pastures by removing fences or changing fence lines as necessary to allow for a more natural movement of animals Refuge-wide. This would include moving exterior fences to true boundaries. These modifications would allow a more uniform management of Refuge lands by discontinuing permitted grazing on lands currently outside of boundary fences. Increasing grazing acres for the Refuge's herds of large ungulates would improve the Refuge's ability to work toward meeting the DOI Bison Initiative's population goals. Costs could be minimized using volunteer help or large workforce groups such as the Youth Conservation Corps (YCC) to affect some of the changes. This project could potentially remove approximately 6-7 miles of interior fence and add approximately 8 miles of exterior fence. The estimated first-year cost is $500,000, with no recurring cost. This project supports achievement of 4.3.1 Goal 1 and Objective 7 and 10, and 4.5.1 Goal 1 and Objective 2 and consists of specific strategies as identified in Chapter 4: Management Direction.

#### 5.5.2.3 Public Use Projects

***Project 23: Wildlife-Dependent Recreation Improvement***

This project intends to improve all wildlife-dependent recreation activities on the Refuge. All six wildlife-dependent uses are compatible on the Refuge and are managed in a way that minimizes conflict with other users and other natural resource management activities. Activities are designed to fit within the existing footprint of human development so no additional habitat is lost and are intended to promote wise use, stewardship, and appreciation of the Refuge and the

natural world. This project supports achievement of 4.4.1 Goal 1 and Objective 1, 4.4.2 Objectives 1, 2, 3, 4, and 5, 4.4.3 Objective 1 and 4.4.4 Goal 2 and Objectives 1, 2, 3, and 4 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 23a: Improve Fishing Opportunities*

Fishing is a primary wildlife-dependent use of a national wildlife refuge and a popular activity at the Wichita Mountains Wildlife Refuge. All waters in the Public Use Area provide a variety of fishing opportunities, some of which include high quality bank, dock, and boat access. Proposed infrastructure projects focus on increasing aquatic interpretation and education and installing accessible fishing piers (see Public Use Facilities – Fishing Facilities). Other projects focus on improving management of the human environment to protect the fisheries resource and improve the quality of the fishing experience. These projects include hosting a Kids' Fishing Clinic, stocking selected lakes, and increasing enforcement of litter, alcohol, and fishing regulations. The estimated start-up cost of $91,000 includes 0.5 of a new GS-5/7/9 Law Enforcement position. The annual operating cost is estimated to be $57,400. This project supports achievement of 4.4.1 Goal 1 and 4.4.2 Objective 1 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 23b: Improve Wildlife Observation and Photography Opportunities*

The Refuge receives over 1.5 million visitors each year, all of which engage in some level of wildlife and habitat observation. Most visitors are local or regional residents who have visited the Refuge before. They tour by automobile and typically make stops at the Visitor Center, Mt. Scott, and Turkey Creek prairie dog town. While wildlife observation and photography opportunities abound along all Refuge roads, small improvements to existing infrastructure can greatly improve the visitor experience (see Public Use Facilities – Wildlife Observation and Photography). Wildlife observation and photography opportunities can also be enhanced by developing online wildlife viewing tips and seasonal guides and by hosting workshops. A visitor use survey is needed to update information on user demographics and interests and will guide the design and placement of future visitor use projects. The estimated start-up cost of $243,000 includes a funding for a one-year visitor use survey and funding for one-fourth of a new GS-5/7/9 LE Park Ranger position. The annual operating cost is estimated at $26,200 per year. This project supports achievement of 4.4.1 Goal 1 and 4.4.2 Objectives 2 and 3 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 23c: Improve Interpretive Opportunities*

In addition to the wildlife observation and photography improvements, two interpretive projects would greatly improve the visitor experience on the Refuge: (1) designated and developed viewing routes (2) and improvements to the Refuge's Visitor Center. Since most visits are driving visits, the designation and development of two wildlife viewing routes with wayfinding and interpretive signs and devices would improve the visitor's knowledge and understanding of the Refuge. The 22,000-square-foot Visitor Center located in eastern section of the Public Use Area is the primary outreach and interpretive facility for the Refuge. It receives over 150,000 visitors each year and has been in service since 1997. The interpretive driving routes and Visitor Center upgrades are discussed in more detail in the Public Use Facilities – Interpretive Facilities section. An additional interpretive project is the development of a new accessible nature trail adjacent to the Visitor Center that would complement the information presented inside the Visitor Center. The estimated start-up cost of $125,000 includes trail construction. The estimated

annual cost of trail and interpretive sign maintenance is $5,000. This project supports achievement of 4.4.1 Goal 1 and 4.4.2 Objective 5 and 4.5.1 Goal 1 and Objective 1 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 23d: Improve and Expand the Environmental Education Program*

Unlike interpretation, effective environmental education goes beyond awareness and appreciation to personal change and action. Interpretation is generally of short duration, while true education requires a significant time investment. The Environmental Education Center on Quanah Parker Lake offers the unique opportunity to bring all Refuge and partner-led education to one location that provides a variety of learning environments for youth and adults. Infrastructure improvements would elevate the existing facility from a building where environmental education is sometimes conducted to a place-based complex for environmental immersion studies (see Public Use Facilities – Environmental Education for infrastructure improvements). Proposed activities include increasing the effectiveness of the environmental education program by increasing the staff-led education contacts from 6 to 10 percent annually, and by ensuring that lessons are correlated with State standards. Emphasis will be placed on providing environmental education for teachers and on-site immersion studies for all age groups. In addition to infrastructure improvements and environmental education activities, this project includes the addition of a GS-9 Environmental Education Specialist position to develop and implement the program. The start-up cost is estimated at $234,000, and the annual operating cost is estimated at $106,800. This project supports achievement of 4.4.1 Goal 1 and 4.4.2 Objective 4 and 4.5.1 Goal 1 and Objective 1 and consists of specific strategies as identified in Chapter 4: Management Direction.

***Project 24: Supportive Recreation Improvement***

This project aims to properly manage compatible supportive recreation activities on the Refuge. All supportive recreation uses on the Refuge are managed in a way that minimizes conflict with other users and other natural resource management activities. Activities are designed to fit within the existing footprint of human development so no additional habitat is lost, and activities are intended to promote wise use, stewardship, and appreciation of the Refuge and the natural world. This project supports achievement of 4.4.1 Goal 1 and Objective 2 and 4.4.2 Objectives 6, 7, 8, 9, 10, and 11 and 4.4.4 Goal 2 and Objectives 5, 6, and 7 and 4.5.1 Goal 1 and Objective 1 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 24a: Improve Bicycling and Hiking Opportunities*

Hiking, bicycling, running, and climbing are considered secondary recreational activities that support and facilitate the primary wildlife-dependent recreational uses of a national wildlife refuge described in the previous section. The Wichita Mountains Wildlife Refuge offers world-class hiking and bicycling through ancient granite mountains and the largest remaining block of unbroken southern mixed-grass prairie. Visitors who leave their automobiles and explore the Refuge on foot or bike experience an immersion into one of America’s most unique public treasures. However, visitors who leave their automobiles also have a much greater impact on the wildlife and their habitats. Refuge managers struggle to balance the competing demands of public use with preserving fish, wildlife, and their habitats. The proposed projects are an attempt to balance hiking and biking opportunities with the need to maintain or reduce wildlife disturbance, habitat trampling, and litter. In an effort to keep human disturbance and development limited to the existing footprint, most trail improvements, extensions, and

connections will be located either partially or entirely in a previously disturbed trail, road, or utility corridor. Improvements totaling 4.5 miles on five existing roads and trails are proposed, as are shoulder improvements along State Highway 115 (Meers Road). Activities focus on improving public safety, providing accessible hiking accommodations, and installing interpretive signs or guides to help visitors more fully appreciate the Refuge (see Public Use Facilities - Hiking and Biking Opportunities). Additional activities designed to improve the visitor experience and protect natural resources include:

- Implementation of a recreational density zoning strategy designed to reduce human impacts and crowding in and near Charons Garden Wilderness Area. The zoning strategy would encourage visitation to the east side of the Refuge through improved infrastructure and services. This project includes limiting group size in the Charons Garden Wilderness Area to 15 people or less (low density zone) and 30 people or less in medium density use zone centered around Lost Lake.
- Development of partnership-supported bike share and transit system that would link the Refuge to local communities. A bike share program would increase non-motorized use of the Refuge to address local health and fitness issues.
- Trail usage will be monitored with a trail registration system and a study developed to determine use patterns and impacts to the social and natural environment.

The estimated start-up cost of $275,500 for hiking and bicycling improvements includes one-half of a new GS-5/7/9 Law Enforcement position, one-fourth of a new GS-9 Interpretive Park Ranger position, and the use study. Annual operating costs are estimated at $75,700. This project supports achievement of 4.4.1 Goal 1 and 4.4.2 Objectives 6 and 9 and 4.5.1 Goal 1 and Objective 1 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 24b: Rock Sports Management*

No significant changes are proposed for the management of rock sports on the Refuge. The replacement of existing anchors and the evaluation of new anchor placement will continue to be evaluated on a case-by-case basis in partnership with the Wichita Mountains Climbers Coalition Advisory Bolting Committee. The use density zones and groups size limits described for hiking will also apply to rock sports. Climbing activity will be monitored with a trail registration system and a study developed to determine the impacts of climbing on the social and natural environment. Estimated cost of the study is $150,000. This project supports achievement of 4.4.1 Goal 1 and 4.4.2 Objective 11 and 4.4.4 Goal 2 and Objective 7 and consists of specific strategies as identified in Chapter 4: Management Direction.

*24c: Special Use Program Management*

All public uses occurring on a national wildlife refuge must support the purpose of that refuge and the mission of the National Wildlife Refuge System. All commercial activities, and all public uses not included in the description of wildlife-dependent and supportive recreation activities, must be evaluated and permitted before they can occur. The Refuge has historically permitted some but not all special uses that were occurring. This project proposes to fully implement a Special Use Management Program and actively manage all compatible special uses occurring on the Refuge via permit. This project will require an additional one-half of a GS-9 Park Ranger at a start-up cost of $91,000, and an annual operating cost of $45,000. This project supports achievement of 4.4.1 Goal

1 and Objective 2 and consists of specific strategies as identified in Chapter 4: Management Direction.

#### 5.5.2.4 Facilities Projects

***Project 25: Public Use Facility Maintenance and Upgrades***

This project aims to maintain and/or improve public use facilities while staying within the existing footprint of human development so no additional habitat is lost. Some facilities are aging, are in disrepair, or are not meeting Refuge needs or those of the visiting public. This project supports achievement of 4.5.1 Goal 1, Objective 1 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 25a: Improve Wildlife Observation and Photography Facilities*

The Refuge receives over 1.5 million visitors each year, all of which engage in some level of wildlife observation and photography. Most visitors tour the Refuge by automobile with stops at the Visitor Center, Mt. Scott, and Turkey Creek prairie dog town. While wildlife observation and photography opportunities abound along all Refuge roads, small improvements to existing infrastructure can improve the visitor experience. The proposed projects are designed to encourage motorists to experience the sights, sounds, and smells of the Refuge while learning more about the history and management of the area. Focusing these improvements in the high and medium density use areas (the eastern and central portions of the Public Use Area) can reduce the impacts of high visitation to wildlife and habitats, especially in and near the Charons Garden Wilderness Area. Projects include:

- Construction of two small wildlife viewing blinds along the shore of Lake Elmer Thomas at the Mt. Scott Picnic Area and near the Environmental Education Building on Quanah Parker Lake.
- Improvements to the parking, fencing, and signage at Turkey Creek prairie dog town that would improve the wildlife observation, photography, and interpretive experience while lessening the impacts of high visitation to wildlife.
- Renovation (and possible asbestos abatement) of the Jed Johnson Tower and courtyard that would allow tower access and accessible observation and interpretation opportunities from the courtyard area.

The estimated start-up cost for this project is $750,000, with an annual operating cost of $15,000. This project supports achievement of 4.4.1 Goal 1 and 4.4.2 Objectives 1 and 2 and 4.5.1 Goal 1, Objective 1 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 25b: Improve Interpretive Facilities*

In addition to the wildlife observation improvements, two interpretive projects would greatly improve the visitor experience on the Refuge: (1) designated and developed viewing routes and (2) improvements to the Refuge's Visitor Center. Since most visits are driving visits, the designation and development of wildlife viewing routes with wayfinding and interpretive signs and devices would improve the visitor's knowledge and understanding of the Refuge. The 22,000-square-foot Visitor Center located in eastern section of the Public Use Area is the primary outreach and interpretive facility for the Refuge. It receives over 150,000 visitors each year and has been in service since 1997. Proposed Visitor Center improvements include heavy maintenance of the heating, cooling, and water systems; energy upgrades; replacement of worn

displays; and redesign of the Kids' Discovery Room to allow more hands-on activities and displays. Start-up costs are estimated at $1.53 million, and annual operating costs are estimated at $10,500. This project supports achievement of 4.4.1 Goal 1 and 4.4.2 Objective 4 and 4.5.1 Goal 1, Objective 1 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 25c: Improve Environmental Education Center and Fawn Creek Campground*

Improvements to the Environmental Education Center would be focused within the existing footprint and would consist of outdoor covered classroom areas, an archery range, kitchen upgrades, native landscaping, and improvements to the four existing buildings to improve accessibility, comfort, and energy efficiency. Improvements to the Fawn Creek Campground could include open-air shelters, picnic tables, toilet facilities, and potable water. The wildlife blind and fishing pier proposed for Quanah Parker Lake and the two multi-use trails linking the complex to Doris Campground and the Visitor Center also support the Environmental Education Center. The estimated start-up and annual operating costs are $625,000 and $25,000 respectively. This project supports achievement of 4.4.1 Goal 1 and 4.4.2 Objective 3 and 4.5.1 Goal 1, Objective 1 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 25d: Improve Fishing and Boating Facilities*

The construction of three new accessible fishing piers or docks are proposed in support of the improved fishing opportunities previously described: one on Quanah Parker Lake, one on Jed Johnson Lake, one on Crater Lake. The start-up cost is estimated at $225,000, with an annual operating cost of $9,500 per year. This project supports achievement of 4.4.1 Goal 1 and 4.4.2 Objectives 1 and 7 and 4.5.1 Goal 1, Objective 1 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 25e: Improve Hiking and Biking Opportunities*

Improvements totaling 4.5 miles on five existing roads and trails are proposed, as are about 2.5 miles of shoulder improvements along State Highway 115 (Meers Road). Improvements include increasing public safety, providing accessible hiking accommodations, and adding interpretive signs or guides to help visitors more fully appreciate the Refuge. Some trails will be multi-use, allowing bicycles and foot traffic; others will be restricted to foot traffic only. Proposed improvements include:

- Jed Johnson Tower access road will be graded and surfaced to provide accessible accommodations to the tower.
- The Mt. Scott Nature Trail will utilize the existing dirt administrative road that leads from the picnic area to the southwest corner of Lake Elmer Thomas. The project consists of tread improvement for multi-use traffic.
- The existing trail between Camp Doris and the Environmental Education Center will be improved to allow for multi-use access.
- A multi-use link between the Environmental Education Center and the Visitor Center will be developed using previously disturbed sites such as the highway right-of-way.
- The LETRA Connection Trail will use previously disturbed sites such as the Lake Elmer Thomas Dam road, the historic Refuge entry arch, and the lake dike to create a multi-use trail

linking Fort Sill's recreation facility, Refuge's Lake Elmer Thomas fishing pier, and the Museum of Natural History. Users can then link east or west from that point to other Refuge areas or local communities using highway shoulders.

- The State Highway 115 right-of-way between the intersection with State Highway 49 and the Meers Gate will be evaluated for a shoulder or trail system. This would provide a loop for users of the Mt. Scott bicycle trail, turning a 6-mile one-way trail into a 10-mile loop.
- Install information kiosks at all trailheads.
- Install new trash/recycle receptacles at trailheads.

The estimated start-up cost for this project is $2.15 million with an annual operating cost of $50,000. This project supports achievement of 4.4.1 Goal 1 and 4.4.2 Objectives 6 and 9 and 4.5.1 Goal 1, Objective 1 and consists of specific strategies as identified in Chapter 4: Management Direction.

***Project 26: Administrative Facility Maintenance and Upgrades***

This project aims to maintain and/or improve administrative facilities. Some facilities are aging, are in disrepair, or are not meeting Refuge needs to properly carry out the duty and function of Refuge work. The Refuge will also incorporate green technologies when possible and accessibility features where necessary. This project supports achievement of 4.5.1 Goal 1, Objective 2 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 26a: Replace Headquarters Office Building*

The current Headquarters Office building, which is not fully ADA accessible, will be replaced with a new building that will increase energy efficiency and accessibility. The building is in poor condition where the foundation continues to shift, resulting in several cracks in walls and doors that are unable to shut despite previous foundation repair. The replacement of the Refuge Headquarters Office building is identified as a future deferred maintenance project. Volunteer RV facilities will also be expanded. The estimated cost for this project is $5.8 million, with a recurring cost of $12,000 for maintenance and repair. This project supports achievement of 4.5.1 Goal 1, Objective 2 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 26b: Expand and Update Corrals*

The main Headquarters corrals will be expanded and updated to more efficiently handle the expanding bison herd during the annual auction. Approximately 40 additional pens are needed to properly manage excess bison and longhorns for the auction in addition to a canopy over the chute working area to protect electronics used in processing animals. The estimated first-year cost is $550,000, with a $10,000 recurring cost. This project supports achievement of 4.3.1 Goal 1 and Objectives 7 and 9 and 4.5.1 Goal 1 and Objective 2 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 26c: Move Refuge Boundary Fence*

The Refuge will also move the boundary fence to the true Refuge boundary to allow for ease of management and protection of Refuge lands. Approximately 430 acres of Refuge land currently fall outside of the boundary fence. A preliminary cost estimate is $20 per linear foot for approximately $850,000. This project could potentially remove approximately 6-7 miles of

interior fence and add approximately 8 miles of exterior fence. Any expansion of the refuge through acquisition, conservation easements, or cooperative agreements would require additional fence construction in order to accommodate containment of the Refuge's herds of large grazers. Cost for this would be dependent on actual miles of fence. This project supports achievement of 4.3.1 Goal 1 and Objectives 7 and 9 and 4.5.1 Goal 1 and Objective 2 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 26d: Repair and Maintain Refuge Fences*

The majority of the Refuge fences were constructed in the 1930s by the Civilian Conservation Corps. The age and deterioration of the wire and posts requires periodic maintenance. In addition, weather related damage to fences from wind, floods, ice, and falling trees and limbs requires prompt attention in order to keep the bison, elk, and longhorns on the Refuge and to keep domesticated cattle and other livestock off to prevent genetic contamination and disease introduction. Estimated costs are about $40,000 per year in labor and materials. This project supports achievement of 4.3.1 Goal 1 and Objectives 7 and 9 and 4.5.1 Goal 1 and Objective 2 and consists of specific strategies as identified in Chapter 4: Management Direction.

*Project 26e: Replace Most Residences*

Most residence quarters are listed as a deferred maintenance project to be replaced due to aging and increased maintenance needs. Estimated costs are:

- Quarters 1, $402,607, low priority
- Quarters 2, $271,331, low priority
- Quarters 3, $385,692, low priority
- Quarters 4, $385,642, low priority
- Quarters 5, $385,886, low priority
- Quarters 7, $334,601, low priority
- Quarters 8, $347,218, low priority
- Quarters 9 (Ingram House), $472,308, low priority
- Quarters 10 (Ferguson House), $334,079 (for repairs), high priority
- Quarters 12, $334,723, low priority

This project supports achievement of 4.5.1 Goal 1, Objective 2 and consists of specific strategies as identified in Chapter 4: Management Direction.

***Project 27: Cultural Resource Protection***

This project helps increase Refuge awareness of sites to better protect them. The Refuge will inventory, monitor, and mitigate sites through increased surveys or assessments. Specifically, Residence Quarters # 5 (listed on the National Register of Historic Places) has suffered significant interior water damage from a broken water line and needs major repair in coordination with the State Historic Preservation Office (SHPO). Cultural resource projects are

estimated to amount to $20,000 per year. This project supports achievement of 4.5.1 Goal 2, Objective 2 and consists of specific strategies as identified in Chapter 4: Management Direction.

### *Project 28: Administrative Area Management*

The Holy City (65 acres) and Job Corps (80 acres) sites are located on Refuge lands but are administered by other entities under the terms of Special Use Permits.

#### *Project 28a: Holy City Management*

The Refuge will permit the continued occupancy of the site by an existing chapel, buildings, and structures generally designed to resemble Jerusalem or the Holy Land during the time of Christ, and a 23-foot marble statue of Christ. The site is also occupied by a house for the caretaker, a gift shop, restrooms, a water tank, and a parking lot. A permit will be granted to the Wallock Foundation, a non-profit entity, to continue to manage and operate the Holy City for visitation, similar to a visitor center and interpretive site, as well as to conduct the Easter Sunrise Service and Pageant each year. The Refuge will continue to renew five-year permits authorizing use of the Holy City, subject to conditions needed to assure compatibility of the use. The Refuge will monitor effects of the Holy City uses on natural resources, particularly the nearby prairie dog town, and assure the uses remain compatible with Refuge purposes. If cumulative impacts resulting from the permitted use of the site ultimately make this use incompatible, additional permit conditions will be required to make the use compatible or the use will be discontinued. The Refuge currently spends approximately $5,000 per year and 0.3 full-time equivalents (FTEs) of personnel time per year to manage uses associated with the Holy City. No additional funding or positions are requested to continue permitting, monitoring, and enforcement of the Holy City operations. This project supports achievement of 4.6, Objective 1 and consists of specific strategies as identified in Chapter 4: Management Direction.

#### *Project 28b: Job Corps Management*

Under this project, the Refuge will continue to permit operation of the Job Corps facility and monitor these operations for compliance with permit conditions and environmental impacts. The Refuge will also seek partnership opportunities with the Treasure Lake Job Corps that can facilitate Refuge-specific projects. This project supports achievement of 4.5.1 Goal 1, Objective 2 and consists of specific strategies as identified in Chapter 4: Management Direction.

Table 5-3. Refuge Projects

| Project | Description | Strategy | Priority Level | Cost Estimate – First Year | Cost Estimate – Annual |
|---|---|---|---|---|---|
| **Ecoregion Projects** | | | | | |
| **Project 18 –** Air Quality Protection | Reducing Emissions | Follow smoke management guidelines | High | N/A | N/A |
| | Monitoring | Use IMPROVE and other monitoring devices | High | N/A | N/A |
| **Project 19 –** Water and Fisheries Resource Management | Water and Fisheries Resource Management | Construct fish passage on West Cache Creek | High | $250,000 | N/A |
| | | Maintain or construct low water crossings | High | $150,000 | $5,000 |

| Project | Description | Strategy | Priority Level | Cost Estimate – First Year | Cost Estimate – Annual |
|---|---|---|---|---|---|
| | | Add a boat wash station | Low | $100,000 | $3,000 |
| | | Add a Biologist position | Medium | $154,000 | $108,000 |
| **Project 20 –** Habitat Corridor Enhancement | Land Protection | Promote Refuge expansion through a PPP/LPP | High | $75,000 | N/A |
| | | Add an Ecologist position | High | $154,000 | $108,000 |
| **Habitat and Wildlife Projects** | | | | | |
| **Project 21 –** Invasive and Non-Native Management | Treatment | Treat non-native or invasive flora | High | $80,000 | $42,000 |
| | | Treat invasive and non-native fauna | High | $50,000 | $20,000 |
| | Research | Research Old World bluestem | High | $75,000 | $75,000 (two additional years) |
| | Refuge Position | Add a Biologist position | Medium | $154,000 | $108,000 |
| | Equipment | Acquire native revegetation equipment | Low | $28,450 | $3,000 |
| **Project 22 –** Native Grazer Enhancement | Infrastructure | Modify corrals | See Project 26 | | |
| | Monitoring | Improve/in-crease genetics and herd health Monitoring | Medium | $20,000 | $20,000 |
| | Management | Consolidate pastures and move fence lines | Low | $850,000 | $20,000 |
| **Public Use Projects** | | | | | |
| **Project 23** – Wildlife-Dependent Recreation Improvement | Fishing | Stock fish | Medium | $7,000 | $7,000 |
| | | Host Kids' Fishing Clinic | Medium | $7,000 | $7,000 |
| | | Increase enforcement | Low | $77,000 | $43,400 |
| | Interpretation | Build Visitor Center nature trail | High | $125,000 | $5,000 |
| | Environmental Education | Increase environ-mental education | High | $234,000 | $106,800 |
| | Wildlife Observation and Photography | Develop online observation tools | Medium | $15,400 | $8,680 |
| | | Conduct Visitor Use study | High | $200,000 | N/A |
| | | Offer evening and weekend workshops | Low | $27,600 | $17,520 |
| **Project 24** – Supportive Recreation Improvement | Bicycling | Enhance linkage between existing bike routes | High | $7,700 | $4,340 |
| | | Develop bike share program | Medium | $7,700 | $4,340 |

| Project | Description | Strategy | Priority Level | Cost Estimate – First Year | Cost Estimate – Annual |
|---|---|---|---|---|---|
| | Hiking | Implement group size limits and public use density zoning | High | $100,100 | $67,020 |
| | | Study social and resource thresholds | Medium | $150,000 | N/A |
| | Rock Sports | Study social and resource thresholds | Low | $150,000 | N/A |
| | Special Uses | Permit and administer special uses | High | $91,000 | $45,000 |
| **Facilities Projects** | | | | | |
| **Project 25** – Public Use Facility Maintenance and Upgrades | Fishing | Build 3 new accessible piers | Medium | $150,000 | $3,000 |
| | | Install outreach and education signs | Low | $70,000 | $5,000 |
| | | Harden 3 boat launches | Medium | $7,500 | $1,500 |
| | Wildlife Observation and Photography Facilities | Upgrade Turkey Creek prairie dog town observation area | Medium | $200,000 | $3,500 |
| | | Build 2 observation blinds | Low | $10,000 | $1,500 |
| | | Renovate Jed Johnson Tower | High | $550,000 | $10,000 |
| | Interpretive Facilities | Update Visitor Center exhibits | High | $120,000 | $5,000 |
| | | Install Visitor Center energy upgrades | Medium | $1,245,000 | N/A |
| | | Develop interpretive driving route | High | $160,000 | $5,500 |
| | Environmental Education Facilities | Remodel Environmental Education Center buildings and install energy upgrades | High | $250,000 | N/A |
| | | Develop Environ-mental Education Center | High | $350,000 | $25,000 |
| | | Update Fawn Creek Campground | High | $25,000 | N/A |
| | Hiking and Bicycling Facilities | Increase accessible trail opportunities | High | $500,000 | N/A |
| | | Improve quality of existing roadway (shoulders) | High | $1,600,000 | N/A |
| | | Install additional trailhead kiosks | Medium | $25,000 | N/A |

| Project | Description | Strategy | Priority Level | Cost Estimate – First Year | Cost Estimate – Annual |
|---|---|---|---|---|---|
| | | Install additional trash/recycle containers | High | $25,000 | N/A |
| **Project 26** – Administrative Facility Maintenance and Upgrades | Headquarters Building | Replace Headquarters | Medium-Low | $5,800,000 | $12,000 |
| | Corrals | Expand and update corrals, add canopy | Medium | $550,000 | $10,000 |
| | Fencing | Move Refuge boundary fence | Medium | $850,000 | N/A |
| | Fencing | Repair and maintain Refuge fences | High | $40,000 | $40,000 |
| | Residences | Replace most residences: | | | N/A |
| | | Quarters 1 | Low | $402,607 | |
| | | Quarters 2 | Low | $271,331 | |
| | | Quarters 3 | Low | $385,692 | |
| | | Quarters 4 | Low | $385,642 | |
| | | Quarters 5 | Low | $385,886 | |
| | | Quarters 7 | Low | $334,601 | |
| | | Quarters 8 | Low | $347,218 | |
| | | Quarters 9 | Low | $472,308 | |
| | | Quarters 10 | High | $334,079 | |
| | | Quarters 12 | Low | $334,723 | |
| **Project 27** - Cultural Resource Protection | Archaeo-logical and Historical Sites and Structures | Inventory, monitor, and mitigate sites | Medium | $20,000 | $20,000 |
| **Project 28** – Administrative Area Management | Holy City | Administer permitting and monitoring; and enforce permitted uses | High | $5,000 | $5,000 |
| | Job Corps | Collaborate on projects | Medium | N/A | N/A |

## 5.6 Partnerships

Because the Refuge exists within a dynamic ecosystem and many of its resources are of national and international importance, members of the public, organizations, and other government agencies have interests in the Refuge and the work the Service does. Successful implementation of many Refuge programs requires active community participation, support, and assistance. Partnerships are among the best ways for the Refuge to accomplish its work and fulfill its mission, and it seeks opportunities with others to do that work, including but not limited to the following stakeholders.

Table 5-4. Existing Partnerships

| Partner | Partnership Activity |
|---|---|
| Chamber of Commerce | Provides funding and food services for auctions |

| Partner | Partnership Activity |
|---|---|
| City of Lawton | Participates in cooperative burning between shared boundary and Lake Lawtonka; Refuge provides access to city land; provides cooperative Law Enforcement efforts; cooperates on environmental education and interpretive programs with the City of Lawton School District |
| Comanche County Memorial Hospital | Provides Emergency Medical Response Agency protocols; participates in Fit Kids of Southwest Oklahoma and Nature Quest |
| Comanche County, Future Farmers of America | Participates in the *envirothon*; Wildlife Habitat Education Program (WHEP) |
| Comanche County Extension Service | Participates in service projects; WHEP; 4-H |
| DOI | Refuge participates in the DOI Bison Initiative |
| EPA | Refuge participates in the long-term Mercury Deposition Network program |
| Friends of the Wichitas | Assists in all aspects of Refuge management |
| Ft. Sill | Participates in cooperative burns on shared boundary; invasive species management; visitor services (LETRA); fisheries management for Lake Elmer Thomas |
| Girl/Boy Scouts of America | Participate in service projects |
| NOAA | Manages and collect weather data |
| Oaks and Prairies Joint Venture | Collaborates on landscape-level issues and management |
| Oklahoma Climatological Survey | Operates and maintains a Mesonet weather station and repeater |
| Oklahoma Conservation Commission | Refuge participates in the Blue Thumb program |
| Oklahoma Department of Environmental Quality | Provides mercury sampling and monitoring, particularly for Class 1 air quality |
| ODWC | Cooperatively manages elk and deer hunts; assists in managing fisheries resources; Refuge assists with the Archery in the Schools Program |
| Oklahoma Invasive Plant Council | Collaborates on landscape-level issues and management |
| Parks Foundation | Promotes outdoor recreation and fitness via hiking and biking trails |
| Playa Lakes Joint Venture | Collaborates on landscape-level issues and management |
| Raptor Rehabilitation Center | Provides food for raptors, provides wildlife rehabilitation services, and assists with interpretive events |
| Rocky Mountain Elk Foundation | Promotes elk conservation, assists with elk hunts |
| Treasure Lake Job Corps/U.S. Forest Service | Manages the Job Corps site on the Refuge |
| Tribes – Comanche, Delaware, Ft. Still Apache, Kiowa, Caddo, Apache, and Wichita | Collaborates on Refuge projects and issues |
| Universities and Colleges | Provides research and monitoring opportunities |
| USDA Animal and Plant Health Inspection Service APHIS | Assists in disease monitoring |
| USDA NRCS | Assists in interpretive events |

| Partner | Partnership Activity |
|---|---|
| Volunteer Fire Departments (Local) | Cooperatively manages burns and the Tour de Meers |
| Wichita Mountains Climbers Coalition | Performs trail maintenance |
| Wichita Mountains Scenic Byway Committee | Manages and promotes visitation along the Wichita Mountains Scenic Byway |

#### 5.6.1.1 Future Partnerships

Through the life of the CCP, the Refuge will develop additional partnership opportunities. The following is a list of potential future partnerships:

Table 5-5. Future Partnerships

| Partner | Partnership Activity |
|---|---|
| The Nature Conservancy | Assists in identification and protection of valuable habitat |
| NOAA | Participates in air quality monitoring through the U.S. Climate Reference Network monitoring stations |
| USDA NRCS | Provides outreach to surrounding landowners to protect valuable habitat, especially corridors and riparian areas |
| Local, State, and Federal agencies | Develop and manage a Cooperative Weed Management Area |
| Medicine Park Museum of Natural History | Provides information, interpretation, and shuttle between museum and Refuge |
| Surrounding communities | Provides opportunities for picnicking, camping, and other uses on other public lands |

## 5.7 Memorandums of Understanding and Other Agreements

***AD 3-8-31 MOA – Cattlemen's Texas Longhorn Register***

Under this Memorandum of Agreement (MOA), the Service and the Refuge join and submit application for a lifetime membership with the Cattlemen's Texas Longhorn Registry, contingent upon the concurrence and acceptance of the directorate upon certain points.

***AD 3-8-32 MOA – 4th Platoon 507th Medical Company MAST***

This agreement provides information on the aviation usage of airspace within the Wichita Mountains Wildlife Refuge. Regards noise, altitude of flights permitted over Refuge, and no landings on Refuge.

***AD 3-8-33 MOU – Cameron University***

This Memorandum of Understanding (MOU) with Cameron University covers the details regarding an Environmental Education internship. Memorandum explains specific details regarding the internship.

***AD 3-8-35 MOA – BASS Fisheries Habitat Improvement***

The agreement provides a framework for the coordination, development, and implementation for fisheries habitat improvement, enhancement, protection, and developmental activities on lands controlled by the Service.

### *AD 3-8-39 MOA – Texas Longhorn Breeders Association of America*

The Service and Texas Longhorn Breeders Association of America MOA provides the framework for the continuation of membership and registration of Texas Longhorn cattle raised on the Refuge for the convenience of purchasers of longhorn cattle from the Refuge.

### *AD 3-8-42 MOU – Service/Comanche Co. Western District #3*

Cooperation in fire prevention, pre-suppression, suppression, and related matters.

### *AD 3-8-43 – Wichita Mountains Climbers Coalition*

Cooperative partnership between the Service and the Wichita Mountains Climbers Coalition to ensure that technical rock climbing remains a compatible recreational use of the Refuge.

### *MOU – Comanche Nation*

Refuge assists members of Comanche Nation of Oklahoma in obtaining organic and mineral substances for cultural use upon presentation of their Tribal Identification Card and a letter of authorization from the Comanche Tribal Chairman to the Refuge Manager.

### *MOU – Comanche County Sherriff's Department (pending)*

The Refuge and the Sherriff's Department 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.

### *MOU – State of Oklahoma/City of Tulsa*

The Refuge is able to utilize a trunked 800 megahertz radio system for public safety inter-operability and emergency purposes.

### *MOU – Comanche County Board of County Commissioners/State of Oklahoma*

The Refuge grants the right to install an enclosure in the vicinity of the Mt. Baker radio tower to enhance and expand the previously described radio system.

### *MOU – Oklahoma Department of Environmental Quality*

The purpose of this MOU is to establish and maintain an atmospheric mercury monitoring station in conjunction with the Mercury Deposition Network of the National Atmospheric Deposition Program.

### *Cooperative Agreement – Association of the Friends of the Wichitas*

This agreement facilitates the cooperation of the two parties in the operation of specified interpretive tours and programs.

### *Cooperative Agreement (1448-0002-92-233) – Fort Sill Military Reservation/ODWC*

The purpose of this agreement is to specifically outline the cooperative management and maintenance of Lake Elmer Thomas, its fisheries resources, recreational uses, and physical characteristics.

### *Partnership Agreement – Public Lands Interpretive Association*

The purpose of the agreement is to provide interpretive and educational materials and programs to enhance the appreciation of fish and wildlife resources and encourage utilization of the recreational opportunities provided by Wichita Mountains Wildlife Refuge.

## 5.8 Monitoring and Evaluation

Monitoring ensures the implementation of the CCP and can help the Refuge document its efforts necessary for annually reviewing the CCP. The results of monitoring show how objectives are being achieved and measure progress towards accomplishing goals. Table 5-6 displays monitoring questions and performance measures necessary for tracking this progress, while Appendix H provides an Evaluation Table to be used by the Refuge to document its responses. This monitoring plan may be refined as various step-down management plans are drafted or revised.

### *Refuge Monitoring*

The Refuge will conduct implementation status monitoring of the CCP to evaluate the efficiency and effectiveness of the CCP. The goals of Refuge monitoring are:

- To evaluate, document, and report how well the CCP is applied,
- Determine how well the CCP meets its stated goals, and,
- Determine if the CCP's purpose and direction remain appropriate.

### *Monitoring Plan for CCP Implementation Status*

The CCP Monitoring Plan (Table 5-6) provides a brief synopsis of each Refuge action and of the projects undertaken. It also summarizes the extent to which the identified goals were accomplished and if the projects or actions have been completed.

### *CCP Evaluation Table*

The Evaluation Table (in Appendix H) summarizes the extent to which management actions meet or differ from the goals and objectives stated in the CCP, and the reasons for any variances are noted. The Evaluation Table also identifies the factors that have resulted in desired conditions not being met. Refuge management uses the Evaluation Table, together with input from the Inventory and Monitoring Step-Down Plan and the Visitor Estimation Tool, to propose alternative solutions. Together, this CCP Implementation Monitoring Plan and the Evaluation Table assess the level of the CCP's implementation and, further, compares that assessment with actual results of effectiveness determined through the Step-Down Inventory and Monitoring Plan.

Adaptive management allows the use of alternative solutions to meet desired conditions. It includes defining measurable objectives, monitoring, learning and making changes, and recognizing uncertainties of outcomes. Monitoring and evaluating CCP implementation is critical to adaptive management. The Wichita Mountains Wildlife Refuge CCP Implementation Monitoring Plan, based on the CCP's Objectives from Chapter 4, is presented in the Table 5-6.

Table 5-6. Monitoring Plan for CCP Implementation Status

| Plan Component | Monitoring Question | Measure | Targeted Objective Completion Date |
|---|---|---|---|
| **Ecoregion Objectives** | | | |
| Objective 1 – Climate Change | Are management activities aimed at minimizing the Refuge's carbon footprint? | Number and type of energy efficient and water conservation projects implemented. | Throughout life of CCP |
| Objective 2 – Air Quality | Are management activities minimizing effects to air quality by mitigating smoke, dust, spray, and vehicle emissions? | Number and type of air quality mitigations implemented. | Throughout life of CCP |
| Objective 3 – Fragmentation and Land Protection | Is the Refuge pursuing expansion opportunities? | Type of expansion pursued, documented, or attained. | 2020 |
| Objective 3 – Fragmentation and Land Protection | Is the Refuge connecting and establishing relationships with potential partners and surrounding landowners? | Number and type of Refuge partnerships and partner-assisted projects. | 2020 |
| Objective 4 – Riparian Areas | Is the Refuge educating about and promoting riparian health? | Number and type of educational programs and outreach efforts conducted. | Throughout life of CCP |
| Objective 5 – Water Quality | Is the Refuge educating about and coordinating with partner agencies on water quality? | Number and type of educational programs and partner outreach efforts conducted. | Throughout life of CCP |
| **Habitat Objectives** | | | |
| Objective 1 – Water Resources | Is the Refuge prioritizing its water resource management activities towards the management of megafauna, followed by fisheries, migratory waterfowl, and shorebird species? | Number and type of management activities positively affecting megafauna, fisheries, migratory waterfowl, and shorebird species. | Throughout life of CCP |
| Objective 2 – Spring Modification | Is the Refuge maintaining springs for the management of confined Refuge animals? | Occurrence of Refuge spring maintenance. | Throughout life of CCP |
| Objective 3 – Water Rights | Is the Refuge working toward maintaining its water rights? | Maintained and issued acre feet of water rights per year (State rights). | Throughout life of CCP |
| Objective 4 – Water Conservation | Is the Refuge participating in agency and State water planning and conservation efforts? | Type of Refuge participation. | Throughout life of CCP |
| Objective 5 – Fire Ecology and Management | Is the Refuge burning up to 14,000 acres per year? | Number of acres burned. | Throughout life of CCP |

| Plan Component | Monitoring Question | Measure | Targeted Objective Completion Date |
|---|---|---|---|
| Objective 6 – Invasive and Non-Native Flora | Is the Refuge controlling, eradicating, or confining invasive and non-native flora? | Number and type of management efforts. | Throughout life of CCP |
| Objective 7 – Native Fauna | Is the Refuge using techniques to manage native fauna at targeted levels? | Number and type of management techniques used. | 2017 |
| Objective 8 – Federal Trust Species | Is the Refuge managing Federal Trust Species according to best management practices (BMPs)? | Number and type of BMPs implemented. | Throughout life of CCP |
| Objective 9 – Non-Native Fauna | Is the Refuge decreasing its non-native populations? | Type of management activities aimed at decreasing non-native populations. | 2017 |
| Objective 10 – Permitted Grazing | Has the Refuge boundary fence been moved and, if so, is the Refuge phasing out permitted grazing? | Documentation or other management actions aimed at moving the fence and phasing out permitted grazing. | Throughout life of CCP or until action complete. |
| **Special Areas** | | | |
| Objective 1 – Special Designations | Has the Refuge worked to designate the Special Use Area as a Research Natural Area? | Documentation or other management actions aimed at designating the RNA. | 2013 |
| **Public Use Objectives – Refuge-Wide** | | | |
| Objective 1 – Hunting | Is the Refuge continuing to manage hunts cooperatively based on population and habitat management objectives? | Number of hunt permits issued. | Throughout life of CCP |
| Objective 2 – Special Uses | Is the Refuge managing commercial or other special use activities through Special Use Permits? | Number and type of Special Use Permits issued. | 2014 |
| **Public Use Objectives – Public Use Area** | | | |
| Objective 1 – Fishing | Is the Refuge managing fishing for increased opportunities and improved experiences? | Number and type of opportunities provided and improvements made. | Throughout life of CCP |
| Objective 2 – Wildlife Observation | Is the Refuge allowing public access and providing facilities that contribute to spectacular viewing opportunities? | Type of access allowed and facilities provided. | Throughout life of CCP |
| Objective 3 – Photography | Is the Refuge allowing public access and providing facilities that contribute to spectacular photography opportunities? | Type of access allowed and facilities provided. | Throughout life of CCP |

| Plan Component | Monitoring Question | Measure | Targeted Objective Completion Date |
|---|---|---|---|
| Objective 4 – Environmental Education | Is the Refuge making progress toward developing the Environmental Education Center as an educational training facility? | Number and type of activities undertaken. | 2017 |
| Objective 4 – Environmental Education | Has the Refuge increased emphasis on environmental education from 6 percent to 10 percent of school contacts and staff-led activities? | Number of school contacts made and staff-led activities provided. | 2017 |
| Objective 5 – Interpretation | Has the Refuge updated interpretive facilities and programs? | Number and type of interpretive facilities and programs. | 2024 |
| Objective 6 – Bicycling | Has the Refuge created and improved bicycling opportunities on approximately 13 miles of road? | Miles of road where bicycling opportunities are created or improved. | 2017 |
| Objective 7 – Boating | Are boating activities managed to allow for high quality opportunities and improved experiences? | Type of boating activities allowed and/or improved. | Throughout life of CCP |
| Objective 8 – Camping | Is the Refuge providing developed camping opportunities on-Refuge? | Type of developed camping opportunities provided. | 2018 |
| Objective 8 – Camping | Is the Refuge promoting alternative camping options off-Refuge? | Type of alternative camping options promoted. | 2018 |
| Objective 9 – Hiking | Are hiking opportunities managed to provide for better experiences? | Type of hiking opportunities provided. | 2022 |
| Objective 9 – Hiking | Has the Refuge provided 3.5 miles of accessible trail? | Miles of accessible trail provided. | 2022 |
| Objective 9 – Hiking | Has the Refuge maintained the existing 17.7 miles of trail? | Miles of trail maintained. | 2022 |
| Objective 10 – Picnicking | Is the Refuge providing developed picnicking opportunities at established picnic grounds? | Type of developed picnicking opportunities provided. | 2018 |
| Objective 10 – Picnicking | Is the Refuge promoting alternative picnicking options off-Refuge? | Type of alternative picnicking options promoted. | 2018 |
| Objective 11 – Rock Sports | Are rock sport opportunities administered to provide for better protection of Refuge resources? | Number and type of activities managed. | 2013 |
| **Public Use Objectives – Special Use Area** | | | |
| Objective 1 - Interpretation | Is the Refuge allowing up to 80 interpretive tours annually? | Number of interpretive tours allowed. | Throughout life of CCP |
| **Public Use Objectives – Wilderness Area** | | | |

| Plan Component | Monitoring Question | Measure | Targeted Objective Completion Date |
|---|---|---|---|
| Objective 1 – Wildlife Observation | Is the Refuge managing for spectacular viewing opportunities by improving Wilderness conditions? | Type of viewing opportunities managed and Wilderness conditions improved. | Throughout life of CCP |
| Objective 2 – Photography | Is the Refuge managing for spectacular photography opportunities by improving Wilderness conditions? | Type of photography opportunities managed and Wilderness conditions improved. | Throughout life of CCP |
| Objective 3 – Environmental Education | Has the Refuge limited environmental education in Wilderness? | Number of organized environmental education opportunities offered. | Upon CCP approval |
| Objective 4 – Interpretation | Is the Refuge allowing for individual and limited organized interpretation opportunities? | Number and type of individual and organized interpretation opportunities allowed. | Throughout life of CCP |
| Objective 5 – Camping | Is the Refuge providing opportunities for limited backcountry camping? | Number and type of backcountry opportunities provided. | Throughout life of CCP |
| Objective 6 – Hiking | Is the Refuge managing and improving hiking opportunities by increasing trail maintenance on 3.5 miles of trail? | Miles of trail maintained. | 2018 |
| Objective 7 – Rock Sports | Are rock sport opportunities administered to provide for better protection of Refuge resources? | Number and type of activities managed. | 2013 |
| **Facilities Objectives – Refuge-Wide** | | | |
| Objective 1 – Public Use Facilities | Is the Refuge building, updating, and/or maintaining public use facilities for accessibility, comfort, and fulfillment of the Refuge's purpose? | Number and type of facilities built and/or improvements made. | Throughout life of CCP |
| Objective 2 – Administrative Facilities | Is the Refuge building, updating, and/or maintaining administrative facilities for accessibility, comfort, and fulfillment of the Refuge's purpose? | Number and type of facilities built and/or improvements made. | Throughout life of CCP |
| Objective 3 – Cultural Resources | Is the Refuge identifying and protecting archaeological, historical, and cultural resources? | Type of identification and protection activities implemented. | Throughout life of CCP |
| **Administrative Areas** | | | |
| Objective 1 – Holy City | Is the Refuge managing the Special Use Permit (SUP) with Holy City to minimize impacts to natural resources and recreational users? | Type of management implemented based on monitoring of adjacent natural resources and recreational users for assessment of impacts. | Throughout life of CCP |

| Plan Component | Monitoring Question | Measure | Targeted Objective Completion Date |
|---|---|---|---|
| Objective 2 – Job Corps | Is the Refuge working in cooperation with the Treasure Lake Job Corps to minimize impacts on natural resources and recreational users? | Type of management implemented based on monitoring of adjacent natural resources and recreational users for assessment of impacts. | Throughout life of CCP |

## 5.9 Plan Amendment and Revision

Periodic review and change of this Comprehensive Conservation Plan will be necessary. As knowledge of Refuge resources, user groups, and use evolves, changes in management may be identified. Fish and wildlife populations, user groups, adjacent land users, and other management considerations change with time—often in unforeseen ways. Challenges also may be encountered in trying to implement some portions of the CCP. Plan revision is a necessary part of the adaptive management approach used by the Service. This means that objectives and strategies identified to reach goals can be adjusted.

This CCP will be informally reviewed by Refuge staff while preparing annual work plans. It may also be reviewed during routine inspections or programmatic evaluations or as change of conditions may warrant. Results of the reviews may indicate a need to modify the CCP. The monitoring of objectives is an integral part of the CCP, and management activities may be modified if desired results are not achieved. If minor changes are required, the project leader will determine the level of public involvement and associated NEPA documentation. This CCP will be formally revised at least every 15 years.