

**DRAFT ENVIRONMENTAL ASSESSMENT**  
**For Issuance Of An**  
**Endangered Species Act Section 10(a)(1)(A) Enhancement of Survival Permit**  
**Associated With A**  
**Candidate Conservation Agreement with Assurances**  
**For the Oklahoma Department of Wildlife Conservation**  
**to Conserve the Lesser Prairie-chicken in**  
**the State of Oklahoma**

**U.S. Fish and Wildlife Service**  
**Oklahoma Ecological Services Field Office**  
**9014 E 21<sup>st</sup> St.**  
**Tulsa, Oklahoma 74129**

**April 6, 2012**

## COVER SHEET

Title For Proposed Action: Draft environmental assessment for issuance of an Endangered Species Act section 10(a)(1)(a) Enhancement of Survival Permit associated with a Candidate Conservation Agreement with Assurances for the Oklahoma Department of Wildlife Conservation (ODWC) to conserve the lesser prairie-chicken (*Tympanuchus pallidicinctus*) in the state of Oklahoma.

Unit of the U.S. Fish and Wildlife Service (Service) Proposing the Action: Regional Director, Region 2, U.S. Fish and Wildlife Service, Albuquerque, New Mexico.

Legal Mandate for the Proposed Action: Endangered Species Act of 1973, as amended, Section 10(a)(1)(A), as implemented by 50 CFR 17.22.

Permittee: Oklahoma Department of Wildlife Conservation

Permit Number: TE72923A-0

Duration: 25 years

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## 1.0 INTRODUCTION

This Environmental Assessment (EA) has been prepared in accordance with the requirements of the National Environmental Policy Act [42 USC 4321 *et seq.*](NEPA) to address the impacts on the environment from the implementation of the proposed Agricultural Candidate Conservation Agreement with Assurances for Lesser Prairie-Chickens (CCAA). The CCAA has been developed to support the issuance of a section 10(a)(1)(A) Enhancement of Survival Permit (Permit) and implementation of the conservation for the lesser prairie-chicken in Oklahoma.

The proposed Federal action is whether to approve the CCAA and issue a Permit, pursuant to section 10(a)(1)(A) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*)(ESA). The Oklahoma Department of Wildlife Conservation (ODWC; Applicant; Permittee) has applied for the Permit for the conservation activities to be implemented within the range of the lesser prairie-chicken (*Tympanuchus pallidicinctus*) (LEPC) in Oklahoma. The Service's Preferred Alternative would include the issuance of the section 10(a)(1)(A) Permit.

If and when a species is proposed for listing, and ultimately listed pursuant to the Act, it triggers both a regulatory and a conservation responsibility for Federal, State, private landowners, or other cooperators, as appropriate. These responsibilities stem from section 9 of the ESA that prohibits "take" (i.e., harass, harm, pursue, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct) of a listed species. Along with the section 9 prohibitions, Federal agencies must ensure that their actions will not jeopardize the continued existence of the listed species or destruction or adverse modification of designated critical habitat. Furthermore, under section 7(a)(1) Federal agencies shall utilize their authorities to further the purposes of the Act. The U. S. Fish and Wildlife Service (Service) represents the Federal action agency considering the proposed action.

ODWC proposes to utilize partnerships with agricultural landowners to develop site specific management plans that will implement conservation actions to protect existing LEPC populations and enhance or expand the existing habitat for this species. This will be done through a reduction of threats from agricultural practices and enhancements to the vegetative communities that make up this LEPC habitat. The plan is proposed to be implemented for a period of 25 years, with participation for a landowner to be for the period from enrollment to the end of the period of implementation. The plan, permit and participation are all renewable. The Plan provides guidance in the development and implementation of the conservation strategy and sets minimum requirements to benefit the LEPC while accommodating continued agricultural uses of the lands enrolled.

The implementation of this CCAA and the approval of the requested Permit would provide a mechanism for implementing and monitoring conservation strategies for the LEPC that are not

explicitly addressed or applicable by any other mechanism in Oklahoma. Consequently, any conservation strategies undertaken by non-Federal landowners, lessees, operators, or other eligible cooperators (Participants) would be measures above and beyond current conservation strategies or management of this species. A future decision to list the species would take into consideration actions planned and/or implemented prior to listing pursuant to this CCAA, as well as land use prescriptions contained in any associated documents and the likelihood that they would be implemented with emphasis on threats facing the LEPC. The ODWC has applied to the Service for an enhancement of survival permit pursuant to section 10(a)(1)(A) of the ESA, as amended (16 U.S.C. 1531 et seq.). The permit application includes a proposed CCAA for the LEPC (). ODWC is proposed to be the sole non-federal Permit holder and will be responsible for implementing and administering the CCAA. ODWC will implement conservation measures for LEPCs within the State of Oklahoma by providing technical assistance through which cooperating private landowners can implement voluntary conservation measures to restore and/or maintain suitable habitat for LEPCs on their properties.

Sections 2, 7, and 10 of the ESA allow the Service to enter into this CCAA. Section 2 of the ESA states that encouraging interested parties, through federal financial assistance and a system of incentives, to develop and maintain conservation programs is a key to safeguarding the Nation's heritage in fish, wildlife, and plants. Section 7 of the ESA requires federal agencies, including the Service, to review programs that it administers and to utilize such programs in furtherance of the purposes of the ESA. By entering into this CCAA, the USFWS is utilizing its Candidate Conservation Programs to further the conservation of the Nation's fish, wildlife, and plants. Lastly, Section 10(a)(1)(A) of the ESA authorizes the issuance of permits to "enhance the survival" of a listed species.

The benefits of the conservation measures to be implemented by ODWC and the private landowners it enrolls in the CCAA through Certificates of Inclusion (CI) include encouragement of development and protection of suitable LEPC habitat on non-federal lands. In return, the CCAA provides a mechanism of assuring non-federal landowners, through CIs that no additional conservation measures, other than those agreed upon in the ODWC and Service-approved Wildlife Management Plan (WMP), will be required of them if the LEPC becomes listed as threatened or endangered under the ESA. Such an agreement will help alleviate concerns with private property rights, as well as generate support from non-federal landowners.

## 1.1 PURPOSE OF THE ACTION

The purpose of the action for which this EA is being prepared is to conserve the ecosystems depended upon by the LEPC in such a way as to potentially preclude the need to list this species under the ESA. This purpose, under the CCAA, would be accomplished through the voluntary participation of nonfederal landowners who are willing to protect, maintain, enhance and develop the habitats necessary for the survival and conservation of LEPC within the planning area.

## 1.2 NEED OF THE ACTION

This action is needed to protect and conserve the LEPC through reducing threats that this species faces while providing a mechanism to authorize incidental take of LEPC, should it be listed pursuant to the Act, for the nonfederal landowners who voluntarily participate and continue conservation activities under a potential Enhancement of Survival Permit should the species be listed.

## 1.3 DECISION TO BE MADE BY THE RESPONSIBLE OFFICIAL

The scope of the analysis in this EA covers the direct, indirect, and cumulative environmental effects of approving this CCAA and issuing a section 10(a)(1)(A) Enhancement of Survival permit and anticipated future effects of implementation of the CCAA (including the incidental take authorization). The decision to be made is which alternative to implement and whether the alternative to be implemented will have a significant impact on the existing human environment, which would require the preparation of an Environmental Impact Statement.

### **1.3.1 Description of the Proposed Action**

The proposed action is the approval and permitting of the CCAA, and subsequent implementation of the conservation measures in the CCAA on willing landowner's property. The majority of the land ownership in Oklahoma is non-Federal and to provide an incentive for voluntary conservation of species that are candidates for listing and are located on non-Federal lands, the Service adopted a policy and regulations in 1999 for CCAAs under the authority of Section 10 of the Act (64 FR 32717 and 32706, 69 FR 24084).

Under a CCAA, non-Federal Participants voluntarily commit to implement specific conservation measures on non-Federal lands for species covered by the CCAA. In exchange, they receive permit coverage from the Service which provides the level of incidental take coverage that is anticipated under the implementation of the CCAA and also, assurances that will not require the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources beyond the level otherwise agreed upon for the species covered by the Agreement without the consent of the Participant and Permittee, should the species becomes listed in the future; provided the CCAA is being properly implemented (50 CFR 17.22(d)(5) and 17.32(d)(5)). These assurances provide considerable certainty to the Participants regarding their activity on non-Federal lands covered by the CCAA.

The proposed Federal action is the issuance of a section 10(a)(1)(A) Enhancement of Survival Permit and resulting implementation of the CCAA for the conservation of the LEPC in Oklahoma per an application request by the Permittee. As discussed above, the CCAA provisions would apply to Participants. The following is a brief description of the CCAA.

If the ODWC's request for the permit is approved, they would be the holder of the section 10(a)(1)(A) Enhancement of Survival Permit and enroll Participants through issuance of Certificates of Inclusion (CI) pursuant to the CCAA. The Participants would implement conservation measures for the LEPC within the Permit Area. ODWC would provide technical assistance through which cooperating Participants can implement these voluntary conservation measures for the LEPC on their properties. In return for implementing the conservation measures, the Service would provide the Participants assurances that, for the duration of the CCAA and its associated Section 10(a)(1)(A) Enhancement of Survival Permit, no additional conservation measures or additional land, water, or resource use restrictions beyond those voluntarily agreed to and described in the CI would be required by the Service for the LEPC should they become listed in the future.

Under the CCAA, some examples of actions that may be taken on the ground include, but may not be limited to, the following:

- Balancing duration and intensity of grazing to increase or maintain good nesting and brood-rearing habitats, in addition to creating planned patterns of patchiness on the landscape;
- Deferring grazing, as needed, to increase habitat patchiness on the landscape which will create suitable interspersion of different vegetation providing an interspersion of nesting and brood-rearing habitats (Hagen et al. 2004), enhancing food species (forbs), and increasing nesting cover (mid-tall grasses) for LEPC (Litton et al. 1994);
- Implementing patch burning techniques to provide appropriate structural, compositional, and spatial diversity of habitat components on the landscape;
- Eliminating the routine annual use of broadcast herbicides;
- Protecting sand plum thickets and areas of aromatic sumac for use as cover by LEPC (NRCS 2001); and
- Removing all upland trees, including field windbreaks, from areas intended to be used by LEPC.

ODWC will work with the non-Federal Participants to develop the appropriate CI for their lands. Through the Stakeholder process, representatives from the Service and ODWC will review the enrollments annually to ensure the greatest benefit is occurring for the LEPC. ODWC will annually lead a meeting with USFWS and all participating landowners enrolled under this CCAA to review progress from the previous year, discuss factors influencing LEPC conservation and management, and discuss actions that could benefit LEPC to be initiated in the upcoming year.

#### 1.4 DESCRIPTION OF THE APPLICANT

ODWC is the applicant and enters into this CCAA under the authority of Oklahoma Wildlife Conservation Code, Title 29 (1974), § 3-101. The Oklahoma Department of Wildlife Conservation is the state agency responsible for managing fish and wildlife. The ODWC issues

hunting and fishing licenses and makes sure the public has important information about outdoor recreation. We enforce rules and regulations and have numerous programs that provide for healthy resources and satisfied customers. The mission of ODWC is to manage and conserve the natural and cultural resources of Oklahoma; and to provide hunting, fishing, and outdoor recreation opportunities for the use and enjoyment of present and future generations. As such, the ODWC plays a significant leadership role in LEPC conservation.

## **2.0 ALTERNATIVES**

This section presents details of the preferred alternative and other alternatives that have been considered. NEPA requires that Federal agencies consider a range of alternatives that could reduce the environmental impacts of the particular projects under consideration. The analysis of the environmental consequences of these alternatives is discussed in Section 4 of this document.

### **2.1 ALTERNATIVE 1: NO ACTION**

In the No Action Alternative, the Service would not approve the draft CCAA nor issue the associated section 10(a)(1)(A) Enhancement of Survival permit. Therefore, a programmatic effort to reduce threats through enrollment of private landowners by ODWC would not be providing the assurances through section 10(a)(1)(A) of the ESA and its implementing regulations, policy and guidance for CCAAs. Individual actions and smaller efforts could be undertaken, but the major incentive for landowners to conserve a candidate species, like LEPC, will not be in place. The No Action alternative provides the baseline for comparing the environmental effects of the preferred alternative.

### **2.2 ALTERNATIVE 2: AGRICULTURAL CCAA FOR LEPC (Preferred)**

The preferred alternative is to authorize the issuance of a Permit pursuant to section 10(a)(1)(a) of the ESA based on the CCAA as proposed. The Permit will be assigned permit number TE72923A-0.

The use of a landowner's land by a declining species, such as the LEPC, may bring with it a responsibility to avoid harming the species and its habitat. These responsibilities, depending upon the landowner's tract size and land management or land use objectives, can sometimes limit or modify land use activities. To minimize these responsibilities under the ESA, landowners have generally refrained from undertaking the types of actions that would benefit the species. Regulatory assurances provided in the preferred alternative will give non-federal property owners who voluntarily agree to manage their lands or waters to remove threats to candidate or proposed species that their conservation efforts will not result in future regulatory obligations in excess of those they agree to at the time they enter into the Agreement.



The preferred alternative will provide regulatory assurances to ODWC and the private landowners it enrolls in the CCAA through individual Certificates of Inclusions. Should a non-federal landowner desire to voluntarily join with ODWC to implement conservation measures to restore and/or maintain suitable habitat for LEPCs on their property, ODWC personnel (and/or an agreed upon designee) will survey enrolled lands for the presence of LEPC and suitable habitat. Participating landowners will allow ODWC to record the condition of their land, the quality of LEPC habitat, and the presence of LEPC. This inventory will establish existing soil and vegetative conditions, stocking rates, and species status on the enrolled planning area at the time of development and implementation of the CCAA, and will be reviewed and approved by Service personnel before a CI is issued.

The CCAA conservation actions to be implemented or maintained are intended to conserve, restore, and/or enhance LEPC habitat so that progress toward sustainable population levels can occur. Implementation of these actions is also intended to reduce any unfavorable impacts to LEPC arising from the management and utilization of the enrolled lands. CI applications and the supporting ODWC-approved WMPs will address the improvements to be made, sources of funding, responsibilities for completion of improvements, a time frame, and a monitoring plan to assure the success of improvements.

Although all seasonal habitat requirements of LEPC are necessary for their conservation and recovery, available data indicate that increasing breeding success (i.e., nest success, recruitment) is the primary key to increasing numbers of LEPC (and perhaps therefore, distribution) (Hagen et al. 2004). As a result, conservation measures implemented to improve, recover, and/or enhance LEPC habitat should focus on providing suitable nesting and brood-rearing habitat components (e.g. areas with light to moderate grazing pressure and dominant native shrub cover). The conservation practices outlined below are structured to restore and then maintain native prairie habitats as nesting and brood-rearing habitat, and will also meet the habitat needs of many other short and midgrass-dependent species.

LEPC habitat types (e.g., nesting, foraging, and brood-rearing habitats) should be distributed in a mosaic over contiguous blocks of rangeland habitat. Heterogeneous or “patchy” landscapes encompassing multiple successional states that include tall grasses and shrubs (nesting habitat) in proximity to more open grasslands supporting forbs (brood-rearing habitat) with areas of short grass and bare ground (breeding habitat) support all of the habitat types used by LEPC throughout the year. Large habitat blocks dominated by a single successional state or smaller blocks that are not in proximity to other habitat types used by LEPC may not be suitable for use by LEPC. For example, nesting habitat (tall grass approximately 18 inches in height) and brood-rearing habitat (forbs, sparsely distributed tall grass, patches of bare ground) should always be available within 1 mile of known leks (traditional display ground where male LEPC traditionally gather in the spring to perform courtship displays). The locations of these patches may be rotated throughout the ranch or management unit, but planning to maintain this pattern and still provide necessary patchiness of all habitat components is the challenge and key to LEPC management.

Another method to achieve patchiness on the landscape is through prescribed grazing and fire, the schedule of which would include considerations of forage quantity and location, livestock numbers, and drought. In addition, grazing plans related to LEPCs are intended to produce a variety of several habitat types on the landscape, and therefore must remain flexible to change. A grazing system that creates patchiness on the landscape (or within the management unit) by maintaining middle to late stages of plant succession interspersed with early successional stages is optimal for LEPC (Hagen et al. 2004).

## HABITAT MANAGEMENT MEASURES/PRACTICES

The following are the recommended conservation actions/management practices (that may produce impacts to the human environment) for the preferred alternative to facilitate LEPC habitat conservation, restoration, and/or enhancement within the planning area. Complete and more detailed descriptions of each recommended conservation action/management practice can be found in the proposed CCAA (ODWC 2012).

### Fire and Grazing

Using the appropriate stocking rate (the number of grazing animals or animal units on a given amount of land over a certain period of time) combined with proper fire frequency in accordance with NRCS ecological description sites that will produce desired habitat conditions for all life stages and seasonal uses for LEPC. Fire and grazing are the main habitat management tools that affect habitat structure and pattern on native prairies and shrublands. The frequency, size, and pattern of burning or grazing, and their relationship (fire-grazing interaction) must be considered and managed to meet the year-round habitat requirements of the LEPC.

### Fencing

Permanent barbed-wire and some electric fences can be lethal to LEPC in flight, and should be used only when necessary to achieve other management objectives. The use and installation of fences should be coordinated with other practices such as water distribution and patch burning, to achieve desired prescribed grazing goals and minimize potential impacts to LEPC. Any unneeded fences should be removed. Barbed wire fences should be marked to reduce potential collisions and one-or-two wire electric fences should be substituted for barbed wire fences if conditions allow.

### Herbicides

Herbicides will be used only when habitat goals cannot be achieved by other means and should be used sparingly. They will be used primarily as a tool to maintain cover and food producing plants, such as shrubs and forbs, and the insects that require them. Where grazing management (i.e., stocking rate) is appropriate for the productive capabilities of the land and

fire is periodically used to direct grazing and balance shrub canopy and height, herbicides should only be necessary to control invasive nonnative plants.

### Conservation Cover

Areas of cropland, introduced grasses and other introduced forages, and similar disturbed sites (e.g., roads and well pads) should be converted into native warm season grasses and forbs. Restoration of these sites using a monoculture of grasses or through use of non-native species provides limited benefit to LEPC, and is discouraged. Planting/seeding may be necessary to improve degraded rangeland or to restore croplands, non-native pastures, and similarly disturbed areas to rangeland conditions preferred by the LEPC.

Haying measures should be deferred until LEPC breeding and nesting activities are completed, should ensure that the sites provide suitable LEPC habitat in the winter and following spring, and should be conducted in a manner that allows any LEPCs using the field to escape harm.

Farm Services Agency (FSA)-approved mid-contract management practices for CRP lands should be implemented. Objectives of CRP contracts should strive to replicate properly managed native grasslands by including a forb and shrub component. Non-native grasslands established under CRP contract should be restored to a site-appropriate native plant community or excluded as an area inconsistent with conservation lands.

Extensive areas of shrubs with little or no interspersed native warm season bunch grasses provide limited habitat value for LEPC. In such cases, brush management is a necessary management action to maximize LEPC habitat value. Brush management can be done through prescribed fire, manual/mechanical removal, and in some cases, chemical removal. More details on limitations, exceptions, and recommendations of brush management recommendations can be found in the proposed CCAA.

### Upland Wildlife Habitat Management

Cultivation practices that implement conservation tillage approaches, such as minimum till, mulch till, or no-till, combined with minimal pesticide use will provide additional and supplemental food supplies for LEPC (Litton et al. 1994). While not routinely necessary for survival of LEPC, during prolonged periods of abnormally extreme winter conditions (e.g., deep snow or ice cover for multiple subsequent days), these cropland areas may provide a temporary food source and enhance survival of LEPC. These practices can include supplemental food plots and strip discing to stimulate growth of native foods.

## POPULATION MANAGEMENT MEASURES/PRACTICES

### Predator Control

Predators have historically been a natural part of the landscape in LEPC range, and are not considered a serious threat in areas of high quality LEPC habitat. Predator control will not be recommended as a conservation action.

### Population augmentation/repatriation

Although not currently considered an accepted or proven population management practice under this CCAA, trapping and transplanting of wild or captive-reared LEPC in order to supplement or restore wild populations may be considered in the future.

## MONITORING AND REPORTING

ODWC will be responsible for annual monitoring through its WMP process and ODWC will be responsible for annual reporting requirements related to this CCAA. These annual monitoring and reporting activities by ODWC will fulfill the compliance and biological monitoring requirements of the CCAA.

Should the LEPC be listed as threatened or endangered under the ESA, authorization for incidental take under the Section 10(a)(1)(A) Enhancement of Survival Permit is limited to agricultural, recreational (e.g., viewing or similar non-consumptive uses), and other related activities (e.g., crop cultivation and harvesting, livestock grazing, farm equipment operation). The CCAA does not address oil and gas activities, conversion of native rangeland, tree planting, or wind power.

## RELATIONSHIP TO OTHER AGREEMENTS

The terms of the CCAA shall be governed by and implemented in accordance with applicable Federal law. Nothing in the CCAA is intended to limit the authority of the Service to fulfill its responsibilities under Federal laws. All activities undertaken pursuant to this CCAA or the permit must be in compliance with all applicable state and federal laws and regulations.

Similar Agreements may be developed that include the CCAA's plan and Permit area. If this occurs, landowners may have an option as to which Agreement they wish to participate in. In some circumstances, it may be more appropriate to participate in another agreement based upon land use activities, such as Oil and Gas (O&G) development. At present, three additional agreements are being planned or discussed; CCAA for O&G activities, 5-state LEPC comprehensive CCAA, and commercial wind energy Habitat Conservation Plan.

Any future agreements will need to recognize pre-existing agreements and not conflict with the terms and conditions in their Permits.

There are other established agreements that address the LEPC and/or the dunes sagebrush lizard (DSL, or sand dune lizard), such as the Texas Conservation Plan and New Mexico combined CCA\CCAA. It should be noted that these agreements include language pertaining to shinnery oak management practices for the DSL. These management practices are not applicable to Oklahoma, because the DSL does not occur in Oklahoma.

The ODWC entered into a contract with Ecosystem Management Research Institute (EMRI) in 2012 to develop a conservation plan for the LEPC in Oklahoma: The Oklahoma Lesser Prairie Chicken Conservation Plan (OLEPCCP). The goal is to develop an overall strategy for conservation of the LEPC in Oklahoma. Development of the OLEPCCP will involve synthesis of all pertinent information currently available and input from diverse stakeholders. The OLEPCCP will identify priority conservation areas, population goals, and conservation strategies and actions. The OLEPCCP also will link conservation actions to appropriate entities and contain an implementation timeline.

### **3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT**

Currently, occupied range of the LEPC in Oklahoma is restricted to areas of a mixed sand sagebrush (*Artemisia filifolia*) — bluestem (*Andropogon* spp.) and/or (*Schizachyrium* spp.) plant community or mixed sand shinnery oak (*Quercus havardii*) — bluestem plant community in northeastern Oklahoma, including the panhandle (Sharpe 1968). The CCAA for the LEPC pertains to non-federal lands in Oklahoma encompassed by the current distribution of the LEPC, those non-federal lands that are unoccupied, but potentially suitable LEPC habitat, and those non-federal lands that could provide habitat should the current population and distribution of LEPC increase. In particular, this CCAA will include all or portions of the following Oklahoma counties and this area will be referred to as the planning area: Alfalfa, Beaver, Beckham, Cimarron, Custer, Dewey, Ellis, Harper, Major, Roger Mills, Texas, Washita, Woods, and Woodward. Though the planning area covers approximately 10,538,880 acres in western Oklahoma, ODWC's goal is to enroll a minimum of 100,000 acres under the CCAA by January 1, 2020. The analysis in this Environmental Assessment will include the counties listed above.

Resources considered for analysis under this EA include vegetation, wildlife, listed, proposed, and candidate species, soils, land use and socioeconomics, air quality, water resources and quality, cultural resources, and climate change. Climate change is discussed later in Environmental Consequences.

### 3.1 VEGETATION

The planning area primarily occurs within the Western High Plains, Southwestern Tablelands, which are Central Great Plains Ecological Regions and includes several specific natural communities: Gypsum Hills, Redbed Clay Plains and Western Sand Dunes (Murray 1996). This complex of ecological communities supports a diversity of plant communities, including short-grass plant communities and mixed-grass plant communities. These communities are affected by a number of factors including soil composition, topography, temperature, precipitation, elevation, and land management practices. Table 1 below provides a summary of plant species characteristic of the planning area.

Several invasive plant species (species that cause ecological harm by out-competing native species) have caused economic and environmental problems in Oklahoma. These invasive species include exotic (non-native) species in addition to species that are native to Oklahoma but have an increased presence in a variety of areas due to altered local conditions. Invasive species within the planning area include eastern red cedar (*Juniperus virginiana*), Osage orange (*Maclura pomifera*), salt cedar (*Tamarix ramosissima*), and Johnson grass (*Sorghum halepense*) (Oklahoma Invasive Plant Council 2012).

| <b>Short-grass community</b>       |                       | <b>Mixed-grass community</b>   |                       |
|------------------------------------|-----------------------|--------------------------------|-----------------------|
| <b>Scientific Name</b>             | <b>Common Name</b>    | <b>Scientific Name</b>         | <b>Common Name</b>    |
| <i>Buchloe dactyloides</i>         | buffalograss          | <i>Bouteloua curtipendula</i>  | sideoats grama        |
| <i>Bouteloua gracilis</i>          | blue grama            | <i>Schizachyrium scoparium</i> | little bluestem       |
| <i>Bouteloua curtipendula</i>      | sideoats grama        | <i>Andropogon hallii</i>       | sand bluestem         |
| <i>Aristida</i> spp.               | threeawns             | <i>Sorghastrum nutans</i>      | indiangrass           |
| <i>Eragrostis</i> spp.             | love grasses          | <i>Panicum virgatum</i>        | switchgrass           |
| <i>Sporobolus cryptandrus</i>      | sand dropseed         | <i>Elymus canadensis</i>       | Canada wildrye        |
| <i>Panicum obtusum</i>             | vine-mesquite         | <i>Pascopyrum smithii</i>      | western wheatgrass    |
| <i>Amphiachyris dracunculoides</i> | common broomweed      | <i>Panicum obtusum</i>         | vine-mesquite         |
| <i>Ambrosia psilostachya</i>       | western ragweed       | <i>Sporobolus cryptandrus</i>  | sand dropseed         |
| <i>Conyza canadensis</i>           | horsetail conyza      | <i>Aristida</i> spp.           | threeawns             |
| <i>Euphorbia spathulata</i>        | warty euphorbia       | <i>Dalea purpurea</i>          | purple prairie clover |
| <i>Solanum elaeagnifolium</i>      | silverleaf nightshade | <i>Stillingia sylvatica</i>    | queensdelight         |

|                            |                 |                              |                   |
|----------------------------|-----------------|------------------------------|-------------------|
| <i>Plantago patagonica</i> | woolly plantain | <i>Mentzelia decapetala</i>  | sand lily         |
| <i>Croton texensis</i>     | Texas croton    | <i>Croton texensis</i>       | Texas croton      |
| <i>Sphaeralcea</i> spp.    | globemallow     | <i>Ambrosia psilostachya</i> | western ragweed   |
| <i>Bassia scoparia</i>     | summercypress   | <i>Quercus havardii</i>      | sand shinnery oak |
| <i>Prosopis glandulosa</i> | honey mesquite  | <i>Artemisia filifolia</i>   | sand sagebrush    |
| <i>Yucca</i> spp.          | yucca           | <i>Rhus aromatic</i>         | aromatic sumac    |
| <i>Opuntia</i> spp.        | cactus          | <i>Prunus angustifolia</i>   | Chickasaw plum    |
|                            |                 | <i>Prunus gracilis</i>       | Oklahoma plum     |

### 3.2 WILDLIFE

A diverse array of both resident and migratory wildlife utilizes the planning area. This includes species that are important from an economic, recreational, scientific, and ecological perspective. Due to the many and diverse habitats and the large planning area encompassed within the affected environment, the list of species contained in Tables 2-5 contain species that are found within the plan area. The species presented serve only as a representative sample of wildlife typically found within the short-grass and mixed-grass plant communities.

Hunting is a popular recreational activity in the planning area. Game species of interest include pronghorn (*Antilocapra americana*), quail (*Callipepla squamata*), pheasant (*Phasianus colchicus*), turkey (*Meleagris gallopavo*), white-tail deer (*Odocoileus virginianus*), and mule deer (*Odocoileus hemionus*).

| Scientific Name             | Common Name        | Scientific Name                | Common Name         |
|-----------------------------|--------------------|--------------------------------|---------------------|
| <i>Buteo regalis</i>        | ferruginous hawk   | <i>Sturnella neglecta</i>      | western meadowlark  |
| <i>Buteo swainsoni</i>      | Swainson's hawk    | <i>Aimophila cassinii</i>      | Cassin's sparrow    |
| <i>Bartramia longicauda</i> | upland sandpiper   | <i>Calamospiza melanocorys</i> | lark bunting        |
| <i>Numenius americanus</i>  | long-billed curlew | <i>Ammodramus savannarum</i>   | grasshopper sparrow |
| <i>Lanius ludovicianus</i>  | loggerhead shrike  | <i>Athene cunicularia</i>      | burrowing owl       |
| <i>Callipepla squamata</i>  | quail              | <i>Phasianus colchicus</i>     | pheasant            |
| <i>Meleagris gallopavo</i>  | turkey             |                                |                     |

| Scientific Name                | Common Name        | Scientific Name                     | Common Name             |
|--------------------------------|--------------------|-------------------------------------|-------------------------|
| <i>Bufo cognatus</i>           | great plains toad  | <i>Ambystoma tigrinum mavortium</i> | barred tiger salamander |
| <i>Bufo debilis insidiosus</i> | western green toad | <i>Crotalus viridis viridis</i>     | prairie rattlesnake     |
| <i>Bufo woodhouseii</i>        | Woodhouse's toad   | <i>Phrynosoma cornutum</i>          | Texas horned lizard     |

|                    |                     |                          |                    |
|--------------------|---------------------|--------------------------|--------------------|
| <i>woodhouseii</i> |                     |                          |                    |
| <i>Rana blairi</i> | plains leopard frog | <i>Eumeces obsoletus</i> | great plains skink |

| Table 4. Mammals within the Planning Area |                                |                               |                          |
|---|--------------------------------|-------------------------------|--------------------------|
| Scientific Name                           | Common Name                    | Scientific Name               | Common Name              |
| <i>Spermophilus tridecemlineatus</i>      | thirteen-lined ground squirrel | <i>Canis latrans</i>          | coyote                   |
| <i>Mephitis mephitis</i>                  | striped skunk                  | <i>Lynx rufus</i>             | bobcat                   |
| <i>Didelphis virginiana</i>               | opossum                        | <i>Cynomys ludovicianus</i>   | black-tailed prairie dog |
| <i>Scalopus aquaticus</i>                 | eastern mole                   | <i>Geomys bursarius</i>       | plains pocket gopher     |
| <i>Cryptotis parva</i>                    | least shrew                    | <i>Chaetodipus hispidus</i>   | hispid pocket mouse      |
| <i>Dasyus novemcinctus</i>                | nine-banded armadillo          | <i>Peromyscus maniculatus</i> | deer mouse               |
| <i>Myotis velifer</i>                     | cave bat                       | <i>Dipodomys ordii</i>        | Ord kangaroo rat         |
| <i>Tadarida brasiliensis</i>              | Mexican free-tailed bat        | <i>Lepus californicus</i>     | California jackrabbit    |
| <i>Taxidea taxus</i>                      | badger                         | <i>Erethizon dorsatum</i>     | porcupine                |
| <i>Vulpes velox</i>                       | swift fox                      | <i>Odocoileus virginianus</i> | white-tailed deer        |
| <i>Procyon lotor</i>                      | raccoon                        | <i>Odocoileus hemionus</i>    | mule deer                |
| <i>Bassariscus astutus</i>                | ringtail                       | <i>Antilocapra americana</i>  | pronghorn                |

| Table 5. Reptiles and Amphibians within the Planning Area |                     |                                     |                         |
|---|---------------------|-------------------------------------|-------------------------|
| Scientific Name   | Common Name         | Scientific Name                     | Common Name             |
| <i>Bufo cognatus</i>                                      | great plains toad   | <i>Ambystoma tigrinum mavortium</i> | barred tiger salamander |
| <i>Bufo debilis insidiator</i>                            | western green toad  | <i>Crotalus viridis viridis</i>     | prairie rattlesnake     |
| <i>Bufo woodhouseii</i>                                   | Woodhouse's toad    | <i>Phrynosoma cornutum</i>          | Texas horned lizard     |
| <i>Rana blairi</i>  | plains leopard frog | <i>Eumeces obsoletus</i>            | great plains skink      |

### 3.3 LISTED, PROPOSED, AND CANDIDATE SPECIES

Federally endangered species that may occur in the planning area include: interior least tern (*Sterna antillarum*) and whooping crane (*Grus americana*). Federally threatened species that may occur in the planning area include: piping plover (*Charadrius melodus*) and Arkansas River shiner (*Notropis girardi*). No federally proposed species occur in the planning area at this time. Candidate species that may occur in the planning area include: LEPC, Arkansas darter (*Etheostoma cragini*), and Sprague's pipit (*Anthus spragueii*).



### 3.4 SOILS/GEOLOGIC FORMATIONS

Table 6 contains soil information within the project area by ecological region. Major soil resource concerns in the planning area include wind erosion, water erosion, maintenance of the content of organic matter and productivity of the soils, and management of soil moisture.

Geology in the Western High Plains is covered primarily by eolian loess and sand deposits of Holocene age, underlain by sand and gravel of the Ogallala Formation of Miocene-Pliocene age. The Southwestern Tablelands is covered primarily by loamy and sandy sediments of the Ogallala Formation of Miocene-Pliocene age. The Central Great Plains are underlain primarily by soft, calcareous sandstones, siltstones, and shale. Characteristic red soils have formed in the area because of the underlying Permian red-bed sedimentary rocks. Throughout the planning area, unconsolidated sand and gravel deposits occur in the larger river valleys (USDA 2006).

### 3.5 LAND USE AND SOCIOECONOMIC ENVIRONMENT

Approximately 93% of Oklahoma is in private land ownership (Fisher and Gregory 2001). Of the land in private ownership, over 95% of land use is primarily in range, crop production, or improved pasture. For that portion of the planning area in crop production, cotton, winter wheat, grain sorghum, and other small grains are the predominant crops being

| <b>Ecological Region</b>       | <b>Dominant Soil Orders</b>          | <b>Temperature Regime</b> | <b>Moisture Regime</b> | <b>Mineraology</b>  | <b>General description of soils</b>  |
|--------------------------------|--------------------------------------|---------------------------|------------------------|---------------------|--|
| <b>Western High Plains</b>     | Alfisols and Mollisols               | Mesic                     | Ustic                  | Mixed               | Very deep, well drained, and loamy   |
| <b>Southwestern Tablelands</b> | Alfisols, Inceptisols, and Mollisols | Thermic                   | Ustic                  | Mixed or Carbonatic | Shallow to very deep, well drained, and generally loamy or sandy                                       |
| <b>Central Great Plains</b>    | Alfisols, Inceptisols, and Mollisols | Thermic                   | Ustic                  | Mixed or Smectitic  | Moderately deep to very deep, well drained and moderately well drained, and generally loamy or clayet. |
| Source:<br>USDA 2006           |                                      |                           |                        |                     |  |

farmed without irrigation (USDA 2006). In the planning area where irrigation water is available, locally important crops include cotton, grain sorghum, corn, alfalfa, and soybeans. Confined animal feeding operations, primarily beef cattle and swine, are important to the area (USDA 2006). The remaining 5% of the planning area is either urbanized, in petroleum production, or other uses (USDA 2006).

Conservation practices on cropland include systems of crop residue management, cover crops, windbreaks, vegetative wind barriers, wind stripcropping, and nutrient management. Conservation practices on rangeland include proper grazing use, fencing, and development of watering facilities (USDA 2006).

According to 2010 U.S. Census figures, approximately 96,000 people live within the planning area. This area is largely rural, with agriculture being critical to the local and regional economy. In Oklahoma, approximately 51% of residents participated in wildlife-associated recreation in 2001 (U. S. Department of Interior, Fish and Wildlife Service and U. S. Department of Commerce, U.S. Census Bureau 2002). The dollars spent by those who travel to view the LEPC are a measure of their willingness to pay for their outdoor experiences. Those dollars represent the enjoyment, challenge, camaraderie, adventure, and enhanced physical and mental health achieved through hunting or watching LEPCs. Due to the decline in LEPC numbers, the recreational value of hunting LEPCs has been curtailed in Oklahoma.

### 3.6 WATER RESOURCES AND QUALITY

The planning area has moderately low (average annual total between 15 and 25 inches) and erratic precipitation. This precipitation is the source of water for non-irrigated crops and for rangeland within the planning area.

The Ogallala or High Plains Aquifer is the single major source of water for the planning area. Approximately 97% of the water pumped from the aquifer is used for irrigation (Maupin and Barber 2005), allowing extensive crop production on land that would otherwise be unsuitable for many crops, and withdrawals are currently exceeding recharge.

The Beaver, Canadian, and Cimarron rivers are the largest rivers in the planning area. Some of these rivers, along with their larger tributaries, provide limited water for irrigation along their valleys. Reservoirs in the planning area include Fort Supply Lake, Great Salt Plains Lake, and Optima Lake. Surface water in the form of playa lakes is scattered throughout the planning area. Eighty percent of playas in the region are smaller than 30 acres and depths less than 3 feet (Gurdack and Roe 2009). These lakes are a major source of water for both livestock and wildlife.

Wetlands are landscape features that are delineated on the basis of specific soil, vegetation, and hydrologic conditions. Wetlands are defined as areas typically flooded or saturated frequently enough, and long enough, with surface water or groundwater, that these areas support mostly vegetation adapted for growth in soils that are saturated under normal circumstances (40 CFR 230). Wetlands typically include swamps, marshes, bogs, and similar areas. Waters of the United States is a collective term for all areas subject to regulation by the U.S. Army Corps of Engineers (COE) under Section 404 of the Clean Water Act. Areas subject to jurisdiction under Section 404 of the Clean Water Act include those areas that fall at or below the “plane of ordinary high water” of these waterways as defined by 33 CFR 323.2. Based on National Wetland Inventory (NWI) maps, numerous wetland areas lie within the planning area. These wetlands include temporarily flooded creeks or drainage areas, intermittent/seasonally flooded streambeds, numerous small, permanently flooded impoundments, several small lakes, playa lakes, and ephemeral (temporary) wetlands which are often too small to be identified on NWI maps, and may not be regulated by the COE.

Ground water quality in Western Oklahoma is of good quality from most aquifers, according to Oklahoma Department of Environmental Quality (ODEQ) historical data (ODEQ 2010a). Surface water quality in Oklahoma varies depending on the waterbody. Monitoring efforts are ongoing by ODEQ, however, in 2010, 77% of all waterbodies have insufficient or no data and information to determine if any designated use is obtained. Water quality standards from 2010 were not attained at 17% of all waterbodies in Oklahoma. These waterbodies were considered impaired or threatened for one or more designated uses by a pollutant(s) (ODEQ 2010a). Planning area waterbodies in this category included portions of the Beaver, Cimarron, and Canadian Rivers, and Fort Supply Lake. Major sources of contamination to groundwater and surface water from agricultural activities include animal feedlots, fertilizer and pesticide applications, and irrigation practices.

### 3.7 AIR QUALITY

The ODEQ has established 26 monitoring sites in 12 counties for criteria pollutants (carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide). Ambient values of criteria pollutants collected in 2010 were well below national averages and indicated that Oklahoma has exceedingly good air quality (ODEQ 2010b). ODEQ monitors several pollutants within the planning area. Ozone levels are monitored in Seiling, Oklahoma (Dewey Co.) and fine particulate matter (PM<sub>2.5</sub>) are monitored in Seiling and near Arnett, Oklahoma (Ellis Co.). Ozone and PM<sub>2.5</sub> levels at these sites are typically below standards (personal communication, ODEQ, Kent Stafford, April 2012). Air quality within the planning area would primarily be related to agricultural sources. Air quality concerns may include dust from wind erosion, airborne chemical drift from ground or aerial applications of liquid chemicals, smoke from prescribed fire application, chemical and

nutrient volatilization in agricultural fields, and odors associated with animal confinement facilities.

### 3.8 CULTURAL RESOURCES

The National Register of Historic Places lists 140 historic sites within the planning area. These sites consist of banks, courthouses, homes, mills, hotels, grain elevators, archeological sites, and the Washita battlefield. The Oklahoma State Historic Preservation office lists numerous properties, cemeteries and bridges in their Oklahoma Landmarks Inventory. Pre-historic artifacts from the Clovis people, Folsom hunters, and Paleoindian people have been found throughout the planning area (Oklahoma Archeological Survey 2012). Additionally, there are likely unrecorded archaeological or paleontological sites within the planning area.

The Cheyenne-Arapaho Tribe and Wichita and Affiliated Tribes have tribal jurisdictions and historical reservations within the southern portion of the planning area. These areas may contain cultural resources for these tribes.

### 4.0 ENVIRONMENTAL CONSEQUENCES

In this section, the beneficial and adverse effects of implementing the No Action and the Preferred Alternatives are described. A summary of the potential impacts from these alternatives to the major resource areas chosen for analysis is included in Table 7 below.

| <b>Table 7. Potential Impacts of Alternatives.</b> |  |  |
|--|--|--|
| <i>Resources</i>                                   | <i>No Action Alternative</i>   | <i>Alternative 2 (Preferred Alternative)</i>   |
| <b>Vegetation</b>                                  | Impacts to vegetation would continue at current or similar levels and be managed through existing regulatory mechanisms. Impacts would be <b>negligible and long-term.</b> | Reclamation efforts on the enrolled lands within the Plan Area would address and reduce fragmentation, restore native habitat, and promote LEPC habitat. Impacts would be <b>moderately beneficial and long-term.</b>                          |
| <b>Wildlife</b>                                    | Impacts to wildlife would continue at current or similar levels and would result in progressive habitat fragmentation. Impacts would be <b>negligible and long-term.</b>   | All native wildlife species would benefit from additional conservation measures on the enrolled lands within the Plan Area through improvements in native ecological communities. Impacts would be <b>moderately beneficial and long-term.</b> |

|  |  |   |
|--|--|---|
| <p><b>Listed, Proposed, or Candidate Species</b></p> | <p>Management and protection of federally listed, proposed, and candidate species would continue at current or similar levels and be guided by existing State and Federal regulations, laws, and policies. Impacts would be <b>moderate adverse and long-term.</b></p> | <p>All Status species would benefit from additional conservation measures on the enrolled lands within the Plan Area. Impacts would be <b>moderate to major beneficial and long-term.</b></p>   |
| <p><b>Soils/Geologic Formations</b></p>              | <p>Impacts to soils would continue at current or similar levels. Impacts would be <b>negligible and long-term.</b></p>   | <p>Conservation measures would be implemented that would minimize impacts to soils on the enrolled lands within the Plan Area. Impacts would be <b>moderately beneficial and long-term.</b></p> |

**Table 7. Potential Impacts of Alternatives continued.**

|  |  |  |
|--|--|--|
| <p><b>Land Use and Socioeconomic Environment</b></p> | <p>There would continue to be little incentive for non-Federal landowners, lessees, or operators to engage in the voluntary conservation of proposed, candidate, or listed species. Without a CCAA in place to provide a regulatory compliance mechanism to non-Federal landowners, if the LEPC becomes listed, impacts to current operations would be <b>minor to moderate adverse and long-term.</b></p> | <p>Would result in an opportunity for the Service, ODWC, and non-federal landowners to manage land use impacts to the LEPC on a landscape level with minimal impacts to current operations. Operations would continue at current or similar levels, with regulatory assurances of the modifications to practices agreed to in the CCAA on the enrolled lands within the Plan Area. Impacts would be <b>minor to moderate beneficial and long-term.</b></p> |
| <p><b>Water Resources &amp; Quality</b></p>          | <p>Impacts to water resources and quality would continue at current or similar levels and be managed through existing regulatory mechanisms. Impacts would be <b>negligible and long-term.</b></p>   | <p>Proper grazing, strip discing, herbicide application and prescribed fire used in implementing the CCAA will maintain or improve the water quality on the enrolled lands within the Plan Area. Impacts would be <b>negligible to minor beneficial and long-term.</b></p>   |
| <p><b>Air Quality</b></p>                            | <p>Impacts to air quality would continue at current or similar levels and be managed through existing regulatory mechanisms. Impacts would be <b>negligible and long-term.</b></p>   | <p>Effects of prescribed fire associated with the implementation with the CCAA on air quality would be managed and corrected if detected. Improvements in air-quality are anticipated based on overall reduction in fuels and improved vegetation cover on the enrolled lands within the Plan Area. Impacts would be <b>moderate short-term, with minor to moderate long-term beneficial.</b></p>  |

| <b>Table 7. Potential Impacts of Alternatives continued.</b> |   |  |
|--|---|--|
| <b>Cultural Resources</b>                                    | Impacts to cultural resources would continue at current or similar levels and be managed through existing regulatory mechanisms. Impacts would be <b>negligible</b> . | Effects of activities associated with the CCAA on cultural resources are not anticipated to occur at a higher level than under the No Action Alternative. Because actions under the CCAA (many of which are currently occurring are ongoing actions in the No Action Alternative) would be in compliance with the National Historic Preservation Act, impacts would be <b>minor beneficial and long-term</b> . |

#### 4.1 Vegetation

Thresholds for Intensity, Duration, and Type of Effect:

- **Negligible** – Direct or indirect impacts would have perceptible but small changes in the size, integrity, or continuity of vegetation within the Plan Area.
- **Minor** – Disturbance or protection, restoration, or rehabilitation of vegetation would be measurable or perceptible but limited in size. The overall viability of plant communities would not be affected and would recover.
- **Moderate** – Disturbance or protection, restoration, or rehabilitation of vegetation over a relatively wide area would occur. Impacts would cause a change in plant communities (e.g. abundance, distribution, quantity, or quality), but the impacts would remain localized.
- **Major** – Disturbance or protection, restoration, or rehabilitation of vegetation at a landscape level (i.e. occurring across several different major land resource areas or ecological units within the Plan Area). Any disturbance to federally listed plant species would be considered major adverse effects.

**Duration:**

- **Short-term** – The physical impact from the proposed actions would require less than one growing season for the full recovery of plant communities. Beneficial effects would be observed for one growing season.

- **Long-term** – The physical impact from the proposed actions would require more than one growing season for the full recovery of plant communities. Beneficial effects would be observed for more than one growing season.

#### 4.1.1 Alternative 1 – No Action

No change in the current impacts to vegetation communities, from those described in section 3.1 above, are expected under this alternative. Brush control methods such as herbicide application and prescribed fire could continue to be implemented on non-Federal lands to improve forage for livestock and wildlife within the planning area. Conservation of the LEPC on non-Federal lands would not necessarily be part of the considerations in any management of existing vegetation within the affected area. Any protection of vegetation that provides habitat for the LEPC would be incidental to existing land uses or through the desires of individual landowners. Changes to the impacts on vegetation under this alternative would be **negligible** and **long-term**.

#### 4.1.2 Alternative 2 – Approval and Implementation of the AGRICULTURAL CCAA FOR LEPC (Preferred Alternative)

The Preferred Alternative would result in the implementation of conservation measures aimed at restoring and protecting those plant communities that provide habitat for LEPCs on lands enrolled under the CCAA for the LEPC. These measures would result in an increase in the amount of habitat available to the LEPC within the planning area. In addition, habitat fragmentation and the direct loss of suitable habitat would be reduced on lands enrolled under the CCAA. Impacts to vegetation from recreational use, livestock grazing, and agricultural activities would be managed through a comprehensive, landscape level approach. Participants would have an incentive to protect and manage plant communities and prevent habitat fragmentation for the benefit of the LEPC. Resting areas from grazing periodically, known as deferred grazing, will develop habitat patchiness, mosaic of habitats, on the landscape will create suitable interspersions of different vegetation to provide interspersions of nesting and brood-rearing habitats (Hagen et al. 2004), enhancing food species (forbs) and nesting cover (mid-tall grasses) for LEPC (Litton et al. 1994). Sand plum thickets and areas of aromatic sumac will be protected for use as cover by LEPC (NRCS 2001). Upland trees, including field windbreaks, will be removed from areas intended to be used by LEPC. Implementing patch burning and tree removal techniques may cause short-term moderate impacts, but will provide appropriate structural, compositional, and spatial diversity of habitat components on the landscape (Bidwell et al. 2003). Changes to the impacts on vegetation under this alternative would be **moderately beneficial** and **long-term** up to 25 years.



## 4.2. Wildlife

Thresholds for Intensity, Duration, and Type of Impact:

- **Negligible** - Wildlife would not be affected or the effects would be at or below the level of detection, would be short-term, and the changes would be so slight that they would not be of any measurable or perceptible consequence to the wildlife species' population.
- **Minor** - Disturbance or protection, restoration, or rehabilitation of wildlife habitat would be measurable and perceptible but limited in size.
- **Moderate** - Disturbance or protection, restoration, or rehabilitation of wildlife habitat would occur over a relatively wide area.
- **Major** - Disturbance or protection, restoration, or rehabilitation of wildlife habitat at a landscape level (i.e. occurring across several different major land resource areas or ecological units within the planning area).

### **Duration:**

- **Short-Term** - Complete disturbance recovery in less than five years. Beneficial impacts would occur for less than five years
- **Long-Term** - Disturbance recovery requiring more than five years to return to pre-disturbance levels. Beneficial impacts would occur for greater than five years.

### 4.2.1 Alternative 1 – No Action

Under the No Action Alternative, wildlife would continue to be impacted at current levels by recreational use, livestock grazing, and agricultural activities. These impacts would be indirect and primarily result from habitat fragmentation and habitat degradation. Additional protection would not be afforded wildlife above and beyond what is currently provided through state and Federal regulations, laws, and policies. Changes to the impacts on wildlife under this alternative would be **negligible** and **long-term**.

### 4.2.2 Alternative 2 – Approval and Implementation of the AGRICULTURAL CCAA FOR LEPC (Preferred Alternative)

The Preferred Alternative would result in the implementation of conservation measures aimed at protecting and managing the LEPC. Enhancing LEPC habitat, restoring degraded LEPC habitat, and removing undesirable vegetation will return degraded short-grass and mixed-grass plant communities to historical levels. The conservation measures necessary to maintain species diversity, ecological processes, and genetic integrity of the short and mixed-grass prairie ecosystem would benefit all native wildlife species within the planning area. Implementing patch burning and tree removal techniques may cause short-term minor impacts, but will provide appropriate structural, compositional, and spatial diversity of habitat components on the landscape (Bidwell et al. 2003). The conservation measures implemented under this alternative would be above and beyond those activities currently being implemented through existing state and Federal regulations, laws, and policies. Therefore, this alternative would result in additional conservation and protection of all wildlife species within the planning area. Changes to the impacts on wildlife under this alternative would be **moderately beneficial and long-term**.

#### **4.3 Listed, Proposed, and Candidate Species**

Thresholds for Intensity, Duration, and Type of Impact:

- **Negligible:** When a proposed action would have no measurable effects to a listed, proposed or candidate species.
- **Minor:** Effects on listed, proposed, or candidate species are expected to be discountable or insignificant.
- **Moderate:** When an effect to a listed, proposed, or candidate species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable or insignificant.
- **Major:** When proposed activities could jeopardize the continued existence of a listed, proposed, or candidate species or adversely modify critical habitat. A major impact would also occur if the beneficial effects of the proposed action would likely reduce the need for the species to be listed in its current category (i.e. de-list or down-list).

##### **Duration:**

- **Short-Term** - Impacts from the proposed action would occur for less than 5 years.
- **Long-Term** - Impacts from the proposed action would occur for greater than 5 years.

#### 4.3.1 Alternative 1 – No Action

The No Action Alternative would result in continued management and protection of federally listed species within the planning area through existing State and Federal regulations, laws, and policies. Candidate species would continue to be protected under State laws and managed by the ODWC. At this time, Oklahoma contains no proposed species for listing under the ESA. These existing regulations, laws, and policies may not be sufficient to prevent the listing of candidate species under the ESA without the voluntary cooperation of additional stakeholders. Effects to candidate species would continue to be analyzed on a case-by-case basis with limited opportunity to manage their conservation from a landscape level. Federally listed, proposed, and candidate species would not benefit from additional conservation measures implemented under a CCAA. Any future proposed activities that may affect a listed, candidate, or proposed species within the planning area would undergo Section 7 consultations under the ESA. Changes to the impacts on listed, proposed, and candidate species under this alternative would be **moderate adverse** and **long-term**.

#### 4.3.2 Alternative 2 – Approval and Implementation of the AGRICULTURAL CCAA FOR LEPC (Preferred Alternative)

Under the Preferred Alternative, the LEPC, a candidate species, would benefit directly from the conservation measures implemented on lands enrolled under the CCAA. The LEPC would benefit from less habitat fragmentation and restoration and enhancement of otherwise unsuitable habitat. Participating landowners would have an incentive to contribute to the protection and management of the LEPC. This incentive would be the likelihood that their operational activities, on lands enrolled under the conservation agreements, would not be disrupted in the future if the LEPC was listed under the provisions of the ESA. Most of the effects to federally listed and proposed species would be similar to those under the No Action Alternative, however, some conservation measures, such as prescribed fires, may have minor, short-term adverse impacts on some listed species. Long-term, however, these conservation measures will lead to restored native ecosystems. Changes to the impacts on listed, proposed, and candidate species under this alternative would be **moderate to major beneficial** and **long-term**.

#### 4.4 Soils/Geologic Formations

Thresholds for Intensity, Duration, and Type of Effect:

- **Negligible** - Soils would not be affected or effects would be below or at the lower levels of detection. Any effects to soil resources would be slight and no long-term effects would occur.
- **Minor** - The effects to soil resources would be detectable. Effects to soil erosion potential or productivity would be small, as would be the area affected. If mitigation were needed to offset adverse effects, it would be relatively simple to implement and would likely be successful.
- **Moderate** - The effects on soil erosion potential or productivity would be readily apparent and likely long-term. The resulting change to soil character would cover a relatively wide area. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.
- **Major** - The effect on soil productivity would be readily apparent, long-term, and substantially change the character of the soils at a landscape level (i.e. occurring across several different major land resource areas or ecological units within the planning area). Mitigation measures to offset adverse effects would be needed, extensive, and their success could not be guaranteed.

**Duration:**

- **Short-Term** - Lasting only during the proposed action or no longer than the first growing season thereafter.
- **Long-Term** - A permanent impact.

**4.4.1 Alternative 1 – No Action**

Under the No Action Alternative, soils management and protection would continue to be guided by existing regulatory mechanisms. It is anticipated that impacts to soils from recreational use, livestock grazing, and agricultural activities within the planning area would continue at current levels. These impacts would continue to be managed on a case-by-case basis. Changes to the impacts on to soils under this alternative would be **negligible** and **long-term**.

**4.4.2 Alternative 2 – Approval and Implementation of the AGRICULTURAL CCAA FOR LEPC (Preferred Alternative)**

Under the Preferred Alternative, conservation measures would be implemented on lands enrolled under the CCAA that would minimize impacts from land-use activities to soils. There would be an opportunity to manage and protect soil resources from a landscape perspective within the planning area. Participants would be required to protect or conserve soils through restoration, rehabilitation, or other means above and beyond that which is required under current regulations. The measures outlined would result in fewer impacts to soils and improvements to soil conditions by managing livestock grazing to reduce impacts, limiting vegetation treatments, or restoring native plant communities. Changes to the impacts on soils under this alternative would be **moderately beneficial** and **long-term**.

#### 4.5 Land Use and Socioeconomic Environment

Thresholds for Intensity, Duration, and Type of Effect:

- **Negligible** – Land owners or users would not likely be aware of the effects associated with the proposed action.
- **Minor** - Land owners or users would likely be aware of the effects associated with the proposed action; however the effects would be slight and likely short term.
- **Moderate** - Land owners or users would be aware of the effects associated with the proposed action. Effects would be readily apparent. Land owners or users may be subjected to use restrictions or delays in obtaining permits or leases. Beneficial moderate effects would occur when there are no use restrictions or delays and the impact is short-term.
- **Major** - Land owners or users would be highly aware of the effects of the proposed action and would likely be subjected to significant use restrictions or delays in obtaining permits or leases. Beneficial major effects would occur when there are no use restrictions or delays and the impact is long-term.

##### **Duration:**

- **Short-Term** - Impacts from the proposed action would occur for less than one year.
- **Long-Term** - Impacts from the proposed action would occur for greater than one year.

#### 4.5.1 Alternative 1 – No Action

Under the No Action Alternative, there would continue to be little incentive for private landowners to engage in the voluntary, proactive conservation of candidate species. Landowners would continue to be concerned about the potential regulatory implications of having these species on their land. This atmosphere would continue to inhibit cooperation and collaboration regarding the conservation of candidate species. Livestock grazing and agricultural activities on lands containing candidate species would have the potential to be delayed or restricted as a result of section 7 consultation requirements should these species eventually become listed under the ESA. If these species become listed, there would be no certainty that additional restrictions would not be assessed on these lands. Impacts on Land Use and the Socioeconomic Environment under this alternative would be **minor to moderate adverse and long-term**.

#### 4.5.2 Alternative 2 – Approval and Implementation of the AGRICULTURAL CCAA FOR LEPC (Preferred Alternative)

Under the Preferred Alternative, the approval and implementation of a CCAA would give landowners an opportunity to receive assurances under the CCAA that more stringent restrictions or additional conservation measures would not be required of them in the event the LEPC becomes listed under the ESA. By enrolling in the CCAA, recreational use, livestock grazing, and agricultural activities would likely continue under the conditions of the CI without the additional requirements of the ESA. In addition, participating cooperators could gain public relations benefits from their contributions towards candidate species conservation. The large majority of land within the planning area would remain in agricultural production, but with additional conservation measures to promote LEPC habitat. Impacts on Land Use and Socioeconomic Environment under this alternative would be **minor to moderate beneficial and long-term**.

#### 4.6 Water Resources and Quality

Thresholds for Intensity, Duration, and Type of Effect:

- **Negligible** – Water resources and water quality would not be affected or effects would be below or at the lower levels of detection. Any effects to water resources and quality would be slight and no long-term effects would occur.

- **Minor** - The effects to water resources and water quality would be detectable. Effects to water resources and water quality would be small, as would be the area affected.
- **Moderate** - The effects on water resources and water quality would be readily apparent and likely long-term. The resulting change to water resources and water quality would cover a relatively wide area.
- **Major** - The effect on water resources and water quality would be readily apparent, long-term, and substantially change the character of water resources and water quality throughout the landscape (i.e. occurring across several different major land resource areas or ecological units within the planning area).

**Duration:**

- **Short-Term** - Lasting only during the proposed action or no longer than the one year thereafter.
- **Long-Term** – Impacts from the proposed action would occur for greater than one year.

**4.6.1 Alternative 1 – No Action**

Under the No Action Alternative, water resources and quality changes would continue to be guided by existing regulatory mechanisms. ODEQ would continue to monitor and regulate water quality. It is anticipated that impacts to water resources from recreational use, livestock grazing, and agricultural activities within the planning area would continue at current levels. These impacts would continue to be managed on a case-by-case basis. Changes to the impacts on water resources under this alternative would be **negligible** and **long-term**.

**4.6.2 Alternative 2 – Approval and Implementation of the AGRICULTURAL CCAA FOR LEPC (Preferred Alternative)**

Under the Preferred Alternative, no activity directly related to the issuance of CIs and approval of the CCAA should impact wetlands or water resources. The effects of the CCAA on water resources in the planning area are therefore limited to the potential for impacts to water quality. Proper grazing of rangelands, a habitat management measure of the CCAA, is considered by the U.S. Environmental Protection Agency (2000) as a best management practice for

improving water quality. Proper use of grazing, strip discing, herbicide application, and prescribed fire will maintain enough live vegetation and litter cover to protect the soil from erosion; will achieve riparian and other resource objectives; and will maintain or improve the quality, quantity, and age distribution of desirable vegetation. With the implementation of the CCAA, there would be an opportunity to manage and protect water quality from a landscape perspective within the planning area. It is anticipated that the implementation of the preferred alternative will enhance and restore the function and integrity of the rangeland ecosystem on a landscape level and contribute to minimizing runoff within a watershed and improving its water quality. Some habitat management measures, such as limited herbicide application, prescribed fire, and strip discing have the potential to have negligible to minor, short-term adverse impacts. However, with proper implementation of the combined measures as recommended, changes to the impacts on water resources and quality under this alternative would be **negligible to minor beneficial and long-term.**

#### 4.7 Air Quality

Thresholds for Intensity, Duration, and Type of Effect:

- **Negligible** – Air quality would not be affected or effects would be below or at the lower levels of detection. Any effects to air quality would be slight and no long-term effects would occur.
- **Minor** - The effects to air quality would be detectable. Effects to air quality would be small, as would be the area affected.
- **Moderate** - The effects on air quality would be readily apparent and likely long-term. The resulting change to air quality would cover a relatively wide area.
- **Major** - The effect on air quality would be readily apparent, long-term, and substantially change the character of air quality throughout the planning area (i.e. occurring across several different major land resource areas or ecological units within the planning area).

##### **Duration:**

- **Short-Term** - Lasting only during the proposed action or no longer than the one year thereafter.



- **Long-Term** – Impacts from the proposed action would occur for greater than one year.

#### **4.7.1 Alternative 1 – No Action**

Under the No Action Alternative, air quality changes would continue to be guided by existing regulatory mechanisms. ODEQ would continue to monitor and regulate air quality. It is anticipated that impacts to air resources from dust from wind erosion, airborne chemical drift from ground or aerial applications of liquid chemicals, smoke from prescribed fire application, chemical and nutrient volatilization in agricultural fields, and odors associated with animal confinement facilities within the planning area would continue at current levels. These impacts would continue to be managed on a case-by-case basis. Changes to the impacts on air resources under this alternative would be **negligible and long-term**.

#### **4.7.2 Alternative 2 – Approval and Implementation of the AGRICULTURAL CCAA FOR LEPC (Preferred Alternative)**

Prescribed burning is a component of habitat management practices for properties enrolled in the CCAA. Three pollutants—carbon monoxide and particulate matter (PM<sup>10</sup> and PM<sup>2.5</sup>), together with other chemicals and irritants, as well as visibility—would be expected to be present in or to be affected by smoke generated by prescribed fires. The effects of such fire-generated smoke, furthermore, could potentially occur: (1) onsite and be direct (in the case of immediate effects at the time of a fire and within its vicinity); (2) onsite and be indirect (in the case of lingering such effects, if smoke does not quickly dissipate); (3) offsite and be direct (if smoke is carried quickly to offsite locations); and (4) offsite and be indirect (in the case of lingering such effects, if smoke is carried to offsite locations).

However, the severity, duration, and location of such effects in individual circumstances would depend on numerous factors, including: (1) the size and intensity of fires undertaken or managed under the CCAA; (2) their periodicity (i.e., frequency); (3) wind direction and speed (which determines the rate and direction in which fire-generated smoke would dissipate or be blown); and (4) decisions, in the course of fire planning, by regulatory agencies responsible for fire control and fire-related air quality effects, and, in the course of undertaking fire, by on-the-ground fire control personnel. Therefore, if fire management is undertaken at appropriate scales and intensity, suitable intervals, and in proper conditions, assuming that air quality monitoring by ODEQ and other agencies continues to be carried out, and given the lack of other significant sources of air pollution in the region, two conclusions can be drawn: (1) that the air quality impacts of smoke generated by fire events under the CCAA would be

individually manageable and cumulatively insignificant; and (2) that, to the extent that such effects might become significant, this would be detectable (i.e., through the states' air quality monitoring programs) and could be corrected through appropriate adjustments to fire management conducted under the CCAA.

The other management action that would be implemented under the preferred alternative would help to reduce bare soil areas within the planning area which should reduce wind erosion of soil. Thus, we expect a reduction in particulates related to wind erosion of soil in the area over the duration of implementation of the CCAA and the term of the Permit, if issued.

In summary, we anticipate some short-term adverse effects during implementation, but effects should be consistent with or less than those from existing fire management activities. Improvements in air quality are anticipated in the long-term based upon an overall reduction in fuels and improved vegetation cover within the permit area. We do not anticipate significant effects to Air Quality from implementation of the Preferred Alternative over those that would be anticipated under the No Action Alternative. Changes to the impacts on air resources under this alternative would be **moderate adverse short-term, with minor to moderate beneficial long-term.**

#### **4.8 Cultural Resources**

Thresholds for Intensity, Duration, and Type of Effect:

- **Negligible** – Cultural resources would not be affected or effects would be below or at the lower levels of detection. Any effects to cultural resources would be slight and no long-term effects would occur.
- **Minor** - The effects to cultural resources would be detectable. Effects to cultural resources would be small, as would be the area affected.
- **Moderate** - The effects on cultural resources would be readily apparent and likely long-term. The resulting change to cultural resources would cover a relatively wide area.
- **Major** - The effect on cultural resources would be readily apparent, long-term, and substantially change the character of the cultural resources throughout the planning area (i.e. occurring across several different major land resource areas or ecological units within the planning area).

**Duration:**

- **Short-Term** - Impacts from the proposed action would occur for less than one year.
- **Long-Term** - Impacts from the proposed action would occur for greater than one year.

#### **4.8.1 Alternative 1 – No Action**

Under the No Action Alternative, cultural resource changes would continue to be guided by existing regulatory mechanisms. It is anticipated that impacts to cultural resources from prescribed burns and agricultural practices within the planning area would continue at current levels. These impacts would continue to be managed on a case-by-case basis when required by the State Historic Preservation Office and Tribes. Changes to the impacts on cultural resources under this alternative would be **negligible and long-term**.

#### **4.8.2 Alternative 2 – Approval and Implementation of the AGRICULTURAL CCAA FOR LEPC (Preferred Alternative)**

No activity directly related to the issuance of the CIs and approval of the CCAA is anticipated to impact cultural resources. Indirect impacts related to the issuance of CIs could occur as a result of implementation of covered activities under the CCAA. These include prescribed burns, planting vegetation, and tilling. For two reasons, the effects of these activities *per se* on cultural resources in most cases would be minor—first, because fire would be managed under the CCAA is to be of low to moderate intensity (i.e., would not be destructive); and, second, because most archeological sites and artifacts would be relatively unaffected by moderate-intensity fire either because of their makeup (in the case of clay, ceramic, and stone such materials) or because they typically occur below the present-day ground surface (in the case of organic such materials, such as pollen, which would be affected by even low-intensity fire). Consequently, the primary threat of habitat management on cultural resources would be the activities associated with those involving ground-surface disturbances (e.g., cutting fire lines, tilling), relatively intensive ground-surface activity (e.g., fire camps), and off-road use of large vehicles (e.g., tractors, bulldozers and fire engines)—all of which, should they occur on or in the immediate vicinity of cultural sites or artifacts, could damage or destroy them as a result of crushing (e.g., of building foundations and artifacts); disruption (of soil profiles, artifact location, etc.); and exposure (of artifacts to collection, of trace materials to erosion, etc.).

Any activities carried out in association with the CCAA will need to be treated like federally funded projects, in compliance with the National Historic Preservation Act (NHPA). We will work with the Oklahoma State Historic Preservation Office (SHPO) to streamline the process to meet our obligations

under NHPA. It is anticipated that any potential effects to cultural resources will be avoided, minimized or mitigated in accordance with SHPO requirements. Construction, ground breaking, and any other activity that may impact cultural resources will be better managed under this alternative than if there were no State or Federal agency involvement. Therefore, it is anticipated that no significant local or cumulative impact to cultural resources is likely to occur under this alternative.

In summary, we do not anticipate effects to Cultural Resources from implementation of the Preferred Alternative over those that would be anticipated under the No Action Alternative. Changes to the impacts on cultural resources under this alternative would be **minor beneficial and long-term.**

#### 4.9 Cumulative Impacts

Cumulative impacts include the combined effect of past and present activities, specific planned projects and other reasonably foreseeable future actions that are reasonably certain to occur, regardless of what agency or entity or person undertakes such other actions, within the Plan Area. The Federal action agency (the Service) must determine whether impacts of the proposed action, in this case the approval and implementation of the CCAA for the LEPC, when taken together with other actions would result in a significant environmental impact.

Ongoing activities within the planning area such as oil and gas development, livestock grazing, recreational use, and agricultural activities would continue to have adverse impacts on the resources (i.e. soils, vegetation, wildlife, listed, proposed, and candidate species, and land use and ownership) identified and analyzed in this draft EA, with or without the approval and implementation of the CCAA for the LEPC. However, the conservation measures proposed in the CCAA for the LEPC (Preferred Alternative) would have beneficial impacts to resources, specifically the LEPC on the enrolled lands within the Plan Area.

Potential adverse cumulative effects may occur throughout the Plan Area should the CCAA for the LEPC not be implemented due to the lack of conservation efforts currently implemented in the affected area. Therefore, all actions which may occur in the area, including foreseeable non-Federal actions, may result in cumulative adverse impacts.

By its very nature, implementation of the CCAA for the LEPC would likely decrease the overall surface disturbance attributed to various current land use practices because it focuses on improving native vegetation used as habitat by the LEPC in Oklahoma. These cumulative beneficial impacts would likely reduce relevant threats to the LEPC within the Plan Area. If the LEPC becomes listed in the future, conservation strategies would already

be in place at listing to advance the species toward recovery with the goal of down-listing and/or de-listing as soon as feasible.

Further, the CCAA for the LEPC will afford non-Federal landowners the ability to obtain incidental take authorization for activities that may result in incidental take of the LEPC with no anticipated delays to operations, should the species become listed.

### Climate change

In an October 8, 1997 memorandum, the Council on Environmental Quality (CEQ) issued draft guidelines on how global climate change should be treated in NEPA documents. The CEQ guidance called on Federal agencies to consider in NEPA documents how major Federal actions could affect sources and sinks of greenhouse gases and how climate change could potentially influence such actions. The CEQ bases this guidance on the NEPA regulations which mandate that all “reasonably foreseeable” environmental impacts of the proposed Federal action have to be considered in the NEPA document. The CEQ considers that there is adequate scientific evidence that indicates that climate change is a “reasonably foreseeable” impact of greenhouse gas emissions.

Furthermore, in November 2007, the Intergovernmental Panel on Climate Change (IPCC) issued its *Fourth Assessment Report*, which concluded that evidence of global warming is now “unequivocal.” Some of the IPCC’s findings in this report included rising temperatures, rising sea levels, and retreating arctic ice. The IPCC’s conclusions have been widely accepted as representing the consensus of opinion in the scientific community. According to the EPA (1997), global mean surface temperatures have increased 0.6 to 1.2 °F between 1890 and 1996. The nine warmest years in this century have all occurred within the last 14 years.

Based on regional climate projections (Christensen et al. 2007), by the year 2100, temperatures in Oklahoma could increase by approximately 3.5 °F annually (3.0-3.5 °F in winter and 4 °F in summer). Precipitation in southern and western Oklahoma is estimated to decrease by five percent in annually (5% in winter and 5-10% in summer). As a result, in regard to water resources in Oklahoma, unless increased temperatures are coupled with a strong increase in rainfall, water could become scarcer. A warmer and drier climate would lead to greater evaporation and less water for recharging groundwater aquifers.

The frequency and intensity of extreme weather is of critical importance to ecological systems, and the ability of some plants and animals to migrate and adapt appears to be much slower than the predicted rate of climate change (EPA 1997). Climate change is among one of the greatest challenges facing conservation.

At a local level, anticipated population increases are expected to drive economic growth in Oklahoma over the next 30 years. This increase in population will likely be accompanied

by an increase in fossil fuel consumption and greenhouse gas emissions related to transportation, energy and heat production, commercial or industrial production, agriculture, and other sectors of the economy. At the same time, population increases will also drive land use changes in Oklahoma and likely reduce the amount of forest cover present in Oklahoma. Since mature forests can at least temporarily function as carbon sinks by converting carbon dioxide into stable plant materials (i.e., wood), reduction in forest cover can reduce the ability of the natural landscape to sequester carbon dioxide emitted from the burning of fossil fuels.

As such, the No Action alternative would be expected to contribute to the amount of greenhouse gas emissions in the atmosphere and the associated impacts of global climate change. The magnitude of any such contribution by activities in planning area to the adverse cumulative impacts of global climate change is likely to be minor on a global scale.

While future climate change in Oklahoma may adversely affect the resources analyzed in this EA (particularly the covered species), as described above, the action alternative is not expected to contribute cumulatively to such effects as the goal of prairie habitat restoration will reduce farm and ranching green house gas emissions and these habitats promote carbon sequestering (USEPA and USDOA 2001, USDOE 1999). In addition, the scale of the proposed action is not likely to have more than a negligible effect on global climate change.

## **5.0 COORDINATION AND PREPARATION**

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Public notification of the availability of this Draft Environmental Assessment and Candidate Conservation Agreement with Assurances will be published in the *Federal Register*. All concerned agencies and entities will be provided a copy on request for review and comment.

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