

**DRAFT**  
**Environmental Assessment for the**  
**Oil and Gas**  
**Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie-Chicken**

**LPC Conservation LLC**  
**Colorado, Kansas, New Mexico, Oklahoma, and Texas**



**September 2021**

**U.S. Fish and Wildlife Service**  
**Arlington Ecological Services Field Office**  
**2005 Northeast Green Oaks Boulevard, Suite 140**  
**Arlington, Texas 76006**

**TABLE OF CONTENTS**

1 PROJECT OVERVIEW AND BACKGROUND .....1  
1.1 Introduction and Background .....1  
    1.1.1 Permit Structure .....3  
    1.1.2 Plan Area and Permit Area .....3  
1.2 Regulatory Background .....3  
    1.2.1 Endangered Species Act .....3  
    1.2.2 National Environmental Policy Act .....4  
2 PURPOSE AND NEED .....5  
2.1 Purpose of the Environmental Assessment .....5  
2.2 Proposed Action – Issuance of an Incidental Take Permit .....5  
2.3 Need for Proposed Action .....6  
2.4 Decision to be Made .....6  
3 ALTERNATIVES .....6  
3.1 Alternative 1 (Proposed Action): Issue an Incidental Take Permit for the Applicant’s Habitat Conservation Plan .....7  
    3.1.1 Covered Activities .....7  
    3.1.2 Avoidance and Minimization Measures .....8  
    3.1.3 Mitigation .....9  
    3.1.4 Enrollment, Monitoring, and Reporting Processes .....11  
        3.1.4.1 Enrollment .....11  
        3.1.4.2 Monitoring and Reporting .....11  
    3.1.5 Adaptive Management .....12  
3.2 Alternative 2: Issue an Enhancement of Survival Permit for a Candidate Conservation Agreement with Assurances .....12  
3.3 Alternative 3: No-Action Alternative .....14  
4 AFFECTED ENVIRONMENT .....15  
4.1 Biological Environment .....20  
    4.1.1 Vegetation .....20  
    4.1.2 Wildlife .....21  
        4.1.2.1 General Wildlife .....21  
        4.1.2.2 Eagles .....22  
    4.1.3 Listed, Proposed, and Candidate Species .....22  
4.2 Physical Environment .....25  
    4.2.1 Land Use .....25  
    4.2.2 Noise .....27  
    4.2.3 Visual Resources .....27  
4.3 Cultural Resources .....28

5	ENVIRONMENTAL CONSEQUENCES .....	28
5.1	Biological Environment .....	30
5.1.1	Vegetation .....	30
5.1.1.1	Alternatives 1 and 2 .....	30
5.1.1.2	Alternative 3 (No-Action) .....	33
5.1.2	Wildlife .....	34
5.1.2.1	Alternatives 1 and 2 .....	35
5.1.2.2	Alternative 3 (No-Action) .....	39
5.1.3	Listed, Proposed, and Candidate Species .....	40
5.1.3.1	Alternatives 1 and 2 .....	41
5.1.3.2	Alternative 3 (No-Action) .....	44
5.2	Physical Environment .....	45
5.2.1	Land Use .....	45
5.2.1.1	Alternatives 1 and 2 .....	45
5.2.1.2	Alternative 3 (No-Action) .....	48
5.2.2	Noise .....	48
5.2.2.1	Alternatives 1 and 2 .....	48
5.2.2.2	Alternative 3 (No-Action) .....	50
5.2.3	Visual Resources .....	50
5.2.3.1	Alternatives 1 and 2 .....	51
5.2.3.2	Alternative 3 (No-Action) .....	52
5.3	Cultural Resources .....	53
5.3.1	Alternatives 1 and 2 .....	53
5.3.2	Alternative 3 (No-Action) .....	53
6	CONSULTATION AND COORDINATION .....	54
6.1	Agency Coordination .....	54
6.2	Distribution of the Draft Environmental Assessment .....	54

**LIST OF TABLES**

Table 4-1. Resources Considered and Rationale for Exclusion or Inclusion in Detailed Analysis.....	16
Table 4-2. Federally listed Species <sup>1</sup> with the Potential to Occur in suitable LEPC habitat within the Plan Area for the Oil and Gas Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.....	23

**LIST OF FIGURES**

Figure 1-1. Plan Area and estimated occupied range of lesser prairie-chicken in Colorado, Kansas, New Mexico, Oklahoma, and Texas. .... 2

Figure 4-1. Estimated occupied range of lesser prairie-chicken in Colorado, Kansas, New Mexico, Oklahoma, and Texas. .... 26

**LIST OF ATTACHMENTS**

Attachment A. Oil and Gas Habitat Conservation Plan for the Lesser Prairie-Chicken

Attachment B. Federal- and State-Listed, Proposed, Candidate Species, and Critical Habitats with the Potential to Occur within the Plan Area and be Impacted by the Issuance of the Incidental Take Permit for Lesser Prairie-Chickens.

Attachment C. List of Preparers

Attachment D. References Cited

**ACRONYMS AND ABBREVIATIONS**

Applicant	LPC Conservation LLC
AWWI	American Wind Wildlife Institute
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	Best Management Practice
CCAA	Candidate Conservation Agreement with Assurances
CCAA Administrator	LPC Conservation LLC
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CI	Certificate of Inclusion
CI-holders	oil and gas companies enrolled under the HCP or CCAA
Covered Activities	activities that may result in take of listed species for which LPC Conservation LLC has requested an incidental take permit
Covered Species	species that would be covered by the incidental take permit (lesser prairie-chicken [ <i>Tympanuchus pallidicinctus</i> ])
Conservation Program	activities that would benefit the lesser prairie-chicken through habitat preservation and restoration
CRP	Conservation Reserve Program
CWA	Clean Water Act
DPS	distinct population segment
EA	Environmental Assessment
EO	Executive Order
ESA	Endangered Species Act of 1973
ESP	Enhancement of Survival Permit
FERC	Federal Energy Regulatory Commission
FR	Federal Register
Guidelines	<i>Guidelines for the Establishment, Management, and Operation of Permanent Lesser Prairie-Chicken Mitigation Lands</i>
HCP	<i>Oil and Gas Habitat Conservation Plan for the Lesser Prairie-Chicken</i>
HCP Administrator	LPC Conservation LLC
IPaC	Information for Planning and Consultation
ITP	incidental take permit
LEPC	lesser prairie-chicken
LEPC habitat	herbaceous and hay/pasture land cover types
MLRA	Major Land Resource Area
MW	megawatt

**ACRONYMS AND ABBREVIATIONS – CONT'D.**

NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
Permit Area	the area in which Covered Activities occur
PV	photovoltaic
Plan Area	all areas affected by activities associated with the Covered Activities and Conservation Program
Proposed Action	issuance of an incidental take permit and implementation of the <i>Oil and Gas Habitat Conservation Plan for the Lesser Prairie-Chicken</i>
Service	U.S. Fish and Wildlife Service
SGP CHAT	Southern Great Plains Crucial Habitat Assessment Tool
SHPO	State Historic Preservation Office
SPCC Plan	Spill Prevention, Containment, and Countermeasure Plan
SWPPP	Stormwater Pollution Prevention Plan
THPO	Tribal Historic Preservation Office
U.S.	United States
USC	United States Code
USDA	U.S Department of Agriculture
USEPA	U.S. Environmental Protection Agency
WEST	Western EcoSystems Technology
WNS	white-nose syndrome

## 1 PROJECT OVERVIEW AND BACKGROUND

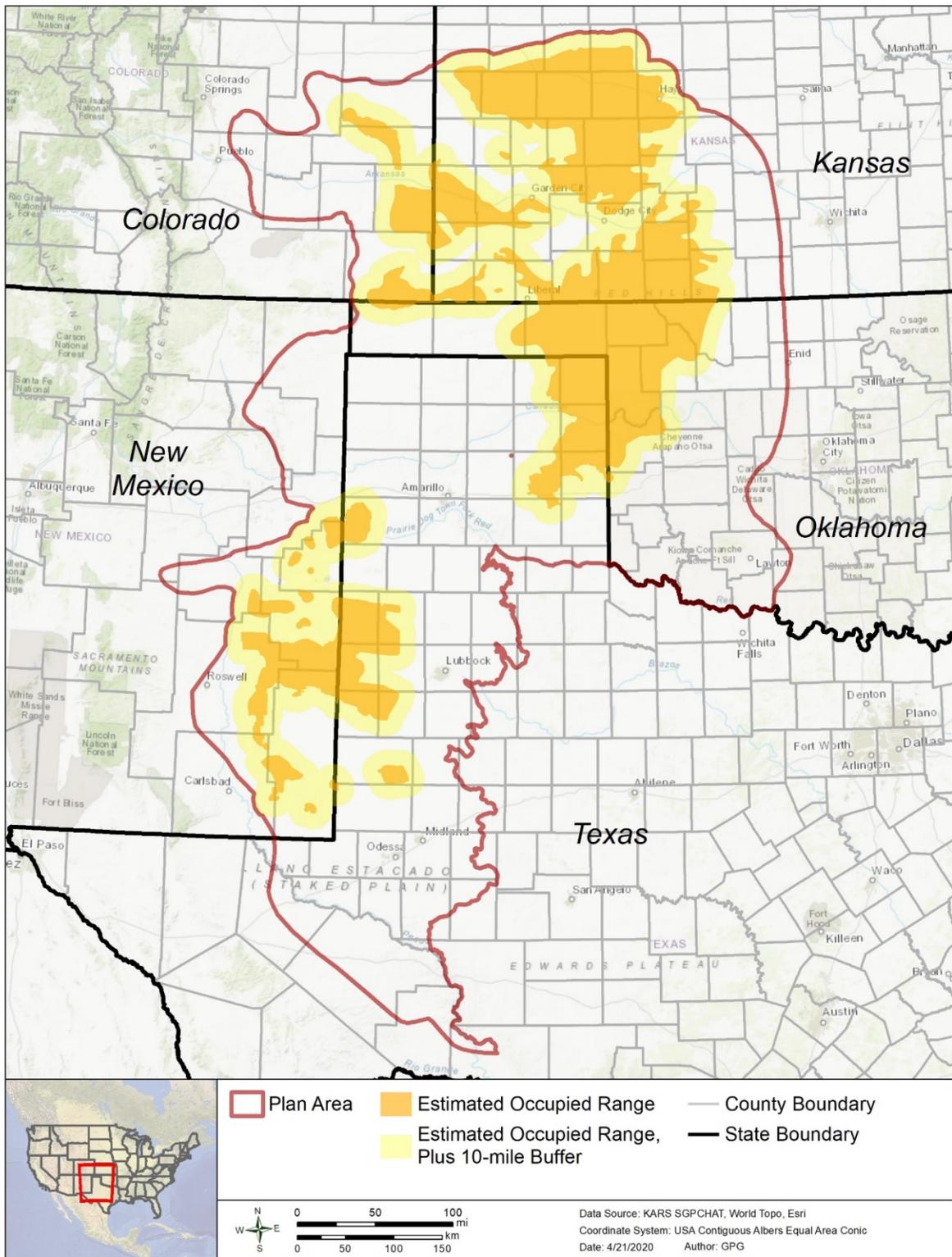
### 1.1 Introduction and Background

The U.S. Fish and Wildlife Service (Service) received an application for a 30-year Incidental Take Permit (ITP), pursuant to the provisions of Section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended (ESA; 16 United States Code [USC] §§ 1531–1544 [1973]) for the incidental take of lesser prairie-chicken (LEPC; *Tympanuchus pallidicinctus*) due to habitat loss, fragmentation, and degradation resulting from oil and gas development in Colorado, Kansas, New Mexico, Oklahoma, and Texas (Figure 1-1). Under Section 10 of the ESA, applicants may be authorized, through issuance of an ITP, to conduct activities that may result in take of species as long as the take is incidental to, and not the purpose of, otherwise lawful activities. In the case of non-listed species, such as LEPC, the ITP becomes effective if the species becomes listed during the life of the ITP. While the LEPC is not federally listed at this time, on June 1, 2021, the Service issued a Proposed Rule to list two distinct population segments (DPS) of the LEPC under the ESA, and requested public comments on the proposed listing (86 Federal Register [FR] 29432). The Service proposes to list the Southern DPS as endangered, and the Northern DPS as threatened with a rule issued under ESA section 4(d), providing exceptions to ESA take prohibitions for agriculture and prescribed burning. The Service will consider public comments received as well as new data that becomes available, and will issue a Final Rule in the FR (typically within one year of the data of the Proposed Rule), which will become effective 30 days later. Based on this process, the earliest the LEPC would be federally protected as an endangered or threatened species is July 2022.

The Applicant, LPC Conservation LLC (Applicant), has prepared the *Oil and Gas Habitat Conservation Plan for the Lesser Prairie-Chicken* (HCP; Attachment A) that specifies, among other things, the impacts that would be likely to result from taking LEPC due to enrolled oil and gas projects, and the measures the Applicant and all participants would undertake to minimize and mitigate such impacts. Due to the LEPC being proposed for federal listing, the Applicant is applying for an ITP to provide long-term assurances that no unauthorized take of LEPC would occur that could give rise to liability for the Applicant and enrolled companies. This Environmental Assessment (EA) was prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, per the update to the implementing NEPA regulations published on July 16, 2020, with an effective date of September 14, 2020 (85 FR 43304; 42 USC §§ 4321 – 4347; 42 USC §§ 4371 – 4375 [2020]) to evaluate the effects of implementing the Applicant’s proposed HCP.

In the HCP, the Applicant notes that the LEPC range is within a geographic region where oil and gas development has been ubiquitous since the early 1900s. Portions of the LEPC range contain the highest densities of existing oil and gas projects and associated infrastructure in the U.S. (see Figure 2a and 2b in the HCP). Additionally, new technologies (e.g., fracking) have resulted in increased production in and near the LEPC range.

OIL AND GAS  
PROPOSED HCP AND ITP FOR LESSER PRAIRIE-CHICKEN



**Figure 1-1. Plan Area and estimated occupied range of lesser prairie-chicken in Colorado, Kansas, New Mexico, Oklahoma, and Texas.**

Implementation of the HCP would offset covered impacts by encouraging avoidance of LEPC habitat (i.e., herbaceous and hay/pasture land cover types) and, where complete avoidance is not possible, minimizing impacts to the LEPC. Remaining impacts to the LEPC would be offset by protecting stronghold habitat (important conservation areas within the species' native habitat, which have a minimum size of 25,000 acres and support multiple leks [Service 2012a]), as well as areas of high-quality habitat and suitable patch size to support viable LEPC populations, and by restoring currently unsuitable habitat.

### **1.1.1 Permit Structure**

The ITP would follow a Programmatic structure, with LPC Conservation LLC serving as the permit holder following the terms of the HCP, under which a project could be enrolled through a Certificate of Inclusion (CI; see Section 1.3 in the HCP). Although a participant could have multiple projects enrolled in the HCP, each project would be assigned a unique CI. Enrolled projects would agree to and abide by all Applicant-committed obligations and requirements as described in Section 5 of the HCP. Should the LEPC become listed during the life of the ITP, incidental take associated with enrolled projects would be covered under the ITP as long as the CI-holders remain in compliance with the terms of the HCP. The Applicant would act as the administrator of the HCP, and thus, would oversee all HCP-related activities of enrolled projects to collectively manage HCP and CI commitments. The Applicant would also serve as the fiscal representative for the ITP and would manage endowments for funding the Conservation Program (see Section 5 of the HCP).

### **1.1.2 Plan Area and Permit Area**

The Plan Area includes all lands that would be affected by the Covered Activities (as described in Section 2 of the HCP and Section 3 of this EA) and the Conservation Program (as described in Section 5 of the HCP and Section 3.1.1 of this EA). As the geographic area where covered impacts would occur, the NEPA analysis and the ESA Section 7 intra-Service conference are focused on the Plan Area, depicted on Figure 1-1.

The Permit Area is a subset of the Plan Area and includes areas where take of LEPC may occur associated with implementation of the HCP, but excludes protected lands (as described in Section 1.5 of the HCP). The specific boundaries of the Permit Area cannot be reasonably delineated at this time because they are dependent on the locations of the projects that enroll in the HCP and on the locations of exclusion areas. As such, the Permit Area shares the same boundary as the Plan Area (Figure 1-1).

## **1.2 Regulatory Background**

### **1.2.1 Endangered Species Act**

The Service is responsible for implementing and enforcing federal wildlife laws, including the ESA. Federally listed threatened and endangered species and designated critical habitat are governed by the ESA and its implementing regulations (50 Code of Federal Regulations [CFR] Parts 13 [1974] and 17 [1975]). The Service also maintains a list of species that are proposed for listing under the ESA. Proposed species are plant and animal species for which the Service has

sufficient information to propose them as endangered or threatened under the ESA, but the development of a proposed listing decision is precluded by other higher priority listing activities. These species are not afforded statutory protection under the ESA; however, federal agencies are required to confer with the Service on any agency action that is likely to jeopardize the continued existence of a proposed species, or result in the destruction or adverse modification of proposed critical habitat.

Section 9 of the ESA prohibits certain activities that affect listed species. For the purpose of the EA and the proposed ITP, the most relevant activity is the take of wildlife species listed under the ESA. The ESA defines the term “take” to include harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to attempt any of these acts (16 USC § 1532.19 [1973]). Take of listed wildlife is illegal unless otherwise authorized by the Service (or National Marine Fisheries Service in marine systems) pursuant to Section 10 of the ESA.

Section 10 of the ESA allows for exceptions to the take prohibitions described in Section 9 of the ESA. Section 10(a)(1)(B) of the ESA allows the Service and National Marine Fisheries Service to authorize the taking by non-federal entities (e.g., states, counties, local governments, private landowners) if such take is incidental to an otherwise lawful activity. To receive a permit, the applicant submits a conservation plan (also referred to as an HCP) that meets the criteria included in the ESA and its implementing regulations (50 CFR Part 17 [1975] and Part 222 [1999]).

Because issuance of an ITP under Section 10(a)(1)(B) of the ESA constitutes a federal action, the Service will conduct an intra-agency conference under Section 7(a)(4) of the ESA. The intra-agency conference is between the Assistant Regional Director for Ecological Services and the field office that assisted the applicant in developing the HCP (in this instance, the Arlington Ecological Services Field Office). The Service’s internal conference on the issuance of an ITP under Section 10(a)(1)(B) represents the last internal “check” that the fundamental standard of avoiding jeopardy has been satisfied. Formal conference terminates with the preparation of a conference opinion, which provides the Service determination as to whether the Proposed Action is likely to jeopardize the continued existence of a species or result in the destruction or adverse modification of proposed critical habitat.

Because the LEPC is currently proposed for listing under the ESA, and would not officially be listed as threatened or endangered until July 2022 at the earliest, it would also be possible for the Applicant to develop a Candidate Conservation Agreement with Assurances (CCAA) and apply for an Enhancement of Survival Permit (ESP) under Section 10(a)(1)(A) of the ESA. As described below in Section 3.2 of this EA, the Service has considered working with the Applicant on a CCAA and issuing an ESP as an alternative to the Proposed Action. Regulations for an ESP associated with a CCAA under the ESA can be found at 50 CFR 17.22(d)(1) for endangered wildlife species and 50 CFR 17.32(d)(1) for threatened wildlife species.

## **1.2.2 National Environmental Policy Act**

NEPA is an environmental law fashioned to ensure careful decision-making with respect to the environment. NEPA also established the CEQ in the Executive Office of the President to

formulate and recommend national policies to ensure that the programs of the federal government exercise careful decision-making with respect to the environment. The CEQ set forth regulations (40 CFR Parts 1500–1508 [2020]) to provide direction to Federal agencies to determine what actions are subject to review; ensure that relevant environmental information is identified and considered early in the review process; ensure that Federal agencies conduct environmental reviews in a coordinated, consistent, predictable and timely manner; and to promote concurrent environmental reviews by federal agencies (40 CFR 1500.1(b)).

NEPA review also provides an opportunity for the public to be involved in the acting agency's decision-making process. The public will have the opportunity to comment on the draft EA as well as the HCP and other application materials for 30 days. These materials will be made available on the FR, the Service's Arlington Ecological Services Field Office webpage ([Arlington Ecological Services Field Office - Home](#)).

The culmination of the EA process is either a Finding of No Significant Impact or a decision to prepare an Environmental Impact Statement. This EA and its analyses assist the Service with making an informed decision on issuance of an ITP.

## **2 PURPOSE AND NEED**

### **2.1 Purpose of the Environmental Assessment**

The Service's purpose in considering the Proposed Action is to fulfill our authority under the ESA, Section 10(a)(1)(B). Non-federal applicants, whose otherwise lawful activities may result in take of species, can apply to the Service for incidental take authority so that their activities may proceed without potential violations of Section 9 of the ESA. In the case of non-listed species in an ITP, the take authority becomes effective should the species become listed during the life of the ITP.

The purpose of the federal action is to address the application for an ITP to authorize take of the LEPC for Covered Activities (as described in Section 2 of the HCP and Section 3 of this EA) within the Permit Area. If the HCP meets the issuance criteria described in Section 10(a)(2)(B) of the ESA and 50 CFR 13.21 are met, then the Service shall issue an ITP for Covered Activities.

### **2.2 Proposed Action – Issuance of an Incidental Take Permit**

The proposed federal action being evaluated by this EA is the request from LPC Conservation LLC to the Service for an ITP authorizing take of the LEPC, a species currently proposed for listing under the ESA, and the implementation of the associated HCP. The Applicant is seeking a 30-year permit term to implement its HCP with the potential for renewal pursuant to 50 CFR § 13.22. The Service's Proposed Action is to issue an ITP to the Applicant on the conditions predicated in the HCP. The purpose of issuing an ITP to the Applicant is to authorize take of LEPC associated with projects that obtain CIs through the process summarized below in Section 3.1.4, and described in detail in Section 5.4.1 of the HCP, should the species become listed during the life of the ITP and HCP.

### **2.3 Need for Proposed Action**

Section 10 of the ESA specifically directs the Service to issue ITPs to non-federal entities when the criteria in Section 10(a)(2)(B) are satisfied by the Applicant. Once we receive an application for an ITP, we need to review the application to determine if it meets issuance criteria. We also need to ensure that issuance of the ITP and implementation of the HCP complies with other applicable federal laws and regulations. We must ensure our permit decision complies with the National Historic Preservation Act of 1966 (NHPA; 16 USC § 470 et. seq. [1966]); treaties; and Executive Order (EO) 11998 (1977), EO 11990 (1977), EO 13186 (2001), EO 12630 (1988), and EO 12962 (1995). In addition, the Service enforces other requirements of the ESA in addition to Section 10. If we issue an ITP, we may condition the permit to ensure the permittee's compliance with all ESA requirements.

In November 2020, the Service received an application from LPC Conservation LLC for an ITP for LEPC under the authority of Section 10(a)(1)(B) of the ESA. If the application is approved and the Service issues a permit, the ITP would authorize the Applicant to take the LEPC as a result of habitat loss, fragmentation, and degradation from the development and operation of oil and gas projects, should the species become listed during the life of the ITP and HCP. The Service has prepared this EA to inform the public of our Proposed Action and the effects of the Proposed Action and its alternatives, seek information from the public, and to use information collected and analyzed to make better informed decisions concerning this ITP application.

### **2.4 Decision to be Made**

The Service must decide whether to issue or deny the ITP. If the permit issuance criteria contained in Section 10(a)(1)(B) of the ESA are satisfied, the Service is required to issue the ITP to the Applicant. The Service may decide to issue an ITP conditioned on implementation of the HCP as submitted by the Applicant, or to issue an ITP conditioned on implementation of the HCP as submitted together with other measures specified by the Service. If the ESA's criteria are not satisfied, the Service is required to deny the permit request.

The Service will analyze the impacts of the proposed Covered Activities on all elements of the natural and human environment that could be affected, including other wildlife species that occur within the covered lands. The Service will indicate the selected alternative in the final EA and will provide a summary of its rationale for issuing the permit in the findings document that supports the permit.

## **3 ALTERNATIVES**

Pursuant to NEPA, an environmental assessment should include a discussion of alternatives to the Proposed Action and the impacts of both the Proposed Action and alternatives considered (Section 102(2)(e) of NEPA; 40 CFR 1501.5(c)(2e) [2020]). This section describes the Proposed Action and alternatives to that action, including an Action Alternative of Issuing an ESP for a CCAA, and the No-Action Alternative.

The alternatives described below were evaluated based on their capacity to meet the Service's purpose of and need for the action (described in Section 2). The potential effects on the human

environment for each of the alternatives are described in detail in Section 5 – Environmental Consequences. As described in additional detail in Section 5.4, a substantial amount of growth in oil and gas development in this region is anticipated, with a steady increase over approximately the next 10 years followed by a plateau, or even decrease, through 2050 (U.S. Energy Information Agency [USEIA] 2020a, 2020b, 2020c, 2020d). As such, the Service assumes that a similar level of oil and gas development would occur in a 30-year period on private lands within the Plan Area regardless of whether a programmatic ITP, programmatic ESP, or neither permitting mechanism, is available. This assumption is based on the current regulatory environment, namely, that the LEPC is proposed for listing under the ESA, and therefore neither the species nor its habitat are afforded legal protection.<sup>1</sup> If the proposed rule to list the LEPC is adopted and the LEPC is effectively protected under the ESA in 2022, this may have some influence on the rate of development in the absence of a programmatic permit; however, the extent to which LEPC listing would deter oil and gas development is difficult to estimate. Based on the large estimated buildout for oil and gas development within the Plan Area (see Table 4 of the HCP), it is unlikely that listing the LEPC would deter development enough to warrant inclusion of speculative analysis in this EA.

### **3.1 Alternative 1 (Proposed Action): Issue an Incidental Take Permit for the Applicant’s Habitat Conservation Plan**

Under Alternative 1, the Service would approve the HCP and issue a programmatic ITP with a 30-year permit term to the Applicant for the incidental take of LEPC, should the species become listed during the life of the ITP and HCP, for Covered Activities in the Permit Area. As the ITP-holder, the Applicant (in the role of HCP Administrator) would oversee enrollment of projects, and manage the requirements of the HCP and ITP, as summarized below.

#### **3.1.1 Covered Activities**

The Covered Activities would include all ground disturbing activities associated with oil and gas extraction, storage, processing, and transportation within the Plan Area that could impact potentially suitable LEPC habitat. In addition, the Covered Activities would include grassland improvement and management activities in potential LEPC habitat on mitigation parcels in order to manage the parcel for LEPC. Both ground disturbance from initial construction and placement of infrastructure due to the Covered Activities is assumed to permanently impact LEPC habitat. Beyond initial construction of a project or grassland improvement activities on mitigation parcels, further ground-disturbing activities associated with grassland improvement activities in those same areas would have minimal impacts to LEPC. Sections 2.1, 2.2, and 2.3 of the HCP provide additional detail on the types of Covered Activities that would be authorized under this Alternative.

---

<sup>1</sup> In Colorado, LEPC is a Tier 1 species of greatest conservation need (Colorado Parks and Wildlife 2015), and the Colorado Oil and Gas Conservation Commission requires projects within 0.6 mile of leks active within the last 10 years to consult with Colorado Parks and Wildlife and implement best management practices to minimize impacts to LEPC. The other four states included in the Plan Area have not implemented state-specific regulatory measures to minimize impacts on LEPC (Van Pelt et al. 2013).

Implementation of the HCP would use acres of suitable LEPC habitat impacted by the Covered Activities as a surrogate for exact numerical amounts of LEPC individuals taken, consistent with ESA regulations (80 FR 26832 [May 11, 2015]). As described in the HCP, Covered Activities authorized under the ITP would be limited to maximum take of up to 500,000 acres of potentially suitable LEPC habitat within the Plan Area.

Due to the linear nature of many oil and gas projects, it is likely that ground disturbance (i.e., the limits of all grading and physical disturbance of soils or vegetation) and/or operational buffers of some enrolled projects may extend beyond the Plan Area boundary; for example, if an enrolled project is located near the boundary of the Plan Area, it is possible that some portions of the project footprint would extend beyond the Plan Area and that a portion of the LEPC avoidance buffer associated with aboveground facilities would also extend beyond the Plan Area. The ITP would only be applicable to lands within the Plan Area; therefore, if impacts to potentially suitable LEPC habitat would occur outside of the Plan Area, they would not be considered Covered Activities and the CI-holders would need to ensure compliance with the ESA for those impacts under different means.

### **3.1.2 Avoidance and Minimization Measures**

Section 5.3 of the HCP provides details on measures that would be taken by CI-holders to avoid and minimize the impact of the taking associated with enrolled projects. These measures are summarized here.

During the siting of new projects, measures to minimize the amount of impacts to potentially suitable LEPC habitat would include:

- locating new project infrastructure, associated temporary impact areas, and impact buffers outside of suitable habitat, or within spaces that have existing impacts;
- co-locating new infrastructure (e.g., pipelines, well pads, access roads, and electrical lines) within the impact buffers of other proposed or existing features on the landscape; and
- burying linear facilities (e.g., power lines and transmission lines), where practicable given geographic, geotechnical, and engineering constraints.

During the LEPC breeding season (March 1 – July 15), enrolled projects would implement the following measures to minimize disturbance associated with increased noise and human activity:

- minimize noise and blasting, traffic volume and speed, and access points; and
- within three miles of leks that have been documented as active within the previous five years;
  - avoid off-road travel, where feasible, and
  - avoid non-emergency activities between 3:00 a.m. and 9:00 a.m.

### 3.1.3 Mitigation

Impacts to suitable habitat that cannot be avoided or remain after minimization measures would be offset by CI-holders through one of three Service-approved mechanisms: the purchase of mitigation credits from a mitigation bank, an in-lieu fee program, or permittee-responsible mitigation projects. As described in Section 5.3.3 of the HCP, mitigation fees would cover the conservation and management of mitigation lands in perpetuity, fully offsetting the impacts of CI-holder enrolled projects on LEPC habitat.

All lands used to provide mitigation for impacts from Covered Activities in this Alternative would be managed under a Service-approved mitigation plan selected by the HCP Administrator. The Service's *Guidelines for the Establishment, Management, and Operation of Permanent Lesser Prairie-Chicken Mitigation Lands* (Guidelines, Service 2014b) would be used to determine siting of conservation lands to be used in mitigation (see Section 5.3.3 of the HCP). Under the Proposed Action, the primary mitigation strategy would be to create LEPC strongholds. Mitigation lands would be managed to either preserve or restore LEPC habitat, and mitigation parcels would provide either static or dynamic LEPC mitigation (described in detail in Section 5.1 of the HCP). In each of these cases, mitigation parcels and management would be approved by the Service.

Static mitigation includes land parcels (typically banking parcels) that would be managed for LEPC and protected in perpetuity through a conservation easement. Static mitigation remains in the same geographic location on the landscape and can include management activities to preserve (preservation: maintenance or enhancement of existing habitat) or restore (restoration: the conversion of unsuitable habitat into suitable habitat) LEPC habitat. Dynamic mitigation can also serve to preserve or restore LEPC habitat in perpetuity; however, unlike static mitigation, land utilized for dynamic mitigation can be moved within the landscape. The total mitigation offset for dynamic mitigation is retained in perpetuity, though the physical location of mitigation sites may shift within the landscape over time. Because of this, lands managed to provide dynamic LEPC mitigation can move within the Plan Area, but the total offset value (total acreage) does not diminish over time or with relocation. The Applicant anticipates 95% of all mitigation provided under the HCP would be static.

Mitigation in the form of habitat preservation (which may be in the form of static and/or dynamic mitigation) would focus on protecting currently suitable LEPC stronghold habitat and would be the preferred form of mitigation until 50,000 acres of Service-approved stronghold habitat or connectivity corridors have been preserved. Some or all of these 50,000 acres may become protected through means other than this HCP; however, the HCP Administrator will ensure the total 50,000 acres are prioritized over other mitigation parcels. After the initial 50,000 acres is secured, through this HCP or other means, the remaining mitigation would be balanced between preservation and restoration, with restoration of at least one acre of habitat for every one acre of LEPC habitat impacted. Restoration activities would include the removal of woody invasive species (e.g., mesquite [*Prosopis* spp.], eastern red cedar [*Juniperus virginiana*]), removal of old infrastructure such as old barns and unused roads, conversion of cultivated croplands into native grassland, and any additional restoration activities approved by the Service. Restoration activities

would be implemented using the most current scientific strategies, knowledge, and expertise to ensure restoration success.

Impacts to LEPC habitat are assumed to be permanent, and due to the inherent uncertainty associated with mitigation, particularly habitat restoration parcels becoming fully functional, mitigation will be provided in perpetuity. Additionally, the mitigation is expected to fully offset the lost value of the impacted habitat because overall project impacts would be mitigated at ratio greater than 1:1, with higher mitigation ratios required for impacts to higher quality LEPC habitat. The Applicant proposes to rank the relative quality of LEPC habitat using by the Southern Great Plains Crucial Habitat Assessment Tool, version 3.0 (SGP CHAT), which is a spatial tool that helps to prioritize conservation efforts for the LEPC (Western Association of Fish and Wildlife Agencies 2020). SGP CHAT defines categorical mitigation offset requirements, based on the quality of the LEPC habitat that would be impacted. Category 1 represents the highest quality (focal) areas for LEPC, and Category 4 represents the relatively lowest quality areas, generally considered as areas as potentially suitable for future LEPC range expansion. Impacts to suitable LEPC habitat for each enrolled project would be determined through a project-specific impact assessment, and offset at a mitigation ratio determined according to the SGP CHAT category in which the impacts occur (see SGP CHAT categories and mitigation ratios in Section 5.3.3.1 of the HCP). If an updated version of SGP CHAT becomes available during the ITP term, it may be adopted into the HCP if agreed upon by the Service and HCP Administrator. Section 5.3.3.1 of the HCP provides a detailed description of the approach that would be followed to determine the exact amount of required mitigation acreage for a given enrolled project.

Mitigation provided to offset impacts would be of an equivalent or higher SGP CHAT category than the impacted areas. If mitigation is unavailable within an equivalent or higher SGP CHAT category and cannot be secured, coordination between the HCP Administrator, potential CI-holders, and the Service would occur to determine an agreed-upon solution.

As described above, impacts to suitable habitat would be offset through the purchase of mitigation credits from a Service-approved mitigation bank, in-lieu fee program, or permittee-responsible mitigation project. A project-specific Conservation Plan for Mitigation Parcels would be developed for all permittee-responsible mitigation projects, to ensure grassland improvement and maintenance activities would be appropriately executed and timed to minimize risks to any LEPC occupying the parcel at the time of the activities (see Section 9.2 of the HCP). The Applicant anticipates approximately 50,000 acres of mitigation would be from permittee-responsible mitigation projects (i.e., from a source other than a Service-approved mitigation bank or in-lieu fee program), which would be subject to Service approval during the CI application review process. However, the requested take of up to 500,000 acres of LEPC habitat could be flexibly allocated among all Covered Activities, including permittee-responsible mitigation.

### **3.1.4 Enrollment, Monitoring, and Reporting Processes**

#### **3.1.4.1 Enrollment**

A potentially eligible project seeking to obtain a CI would coordinate with the HCP Administrator and develop the required application materials; the application process is described in Section 8.4 of the HCP, with a sample application form provided as Appendix B to the HCP. Each project would complete the six-step impact assessment process (described in detail in Section 4.4 of the HCP) to determine the anticipated project-specific impacts to LEPC. Project-specific terms and conditions would be documented within a Participation Agreement, and the applicant for the CI would be required to submit an applicable enrollment fee (Section 7.2.2 of the HCP), administration fee (Section 7.2.3 of the HCP), and proof of funding assurances (Section 7.1 of the HCP). Once the required fees and funding assurances have been received, the HCP Administrator would issue the project a CI, following the process and terms described in Sections 8.5 and 8.6 of the HCP.

#### **3.1.4.2 Monitoring and Reporting**

Throughout the ITP term, the HCP Administrator would be required to conduct both compliance and effectiveness monitoring for all enrolled projects. Compliance monitoring would occur to ensure Covered Activities are conducted in accordance with the terms of the CIs, HCP, and ITP. Effectiveness monitoring would ensure that minimization and mitigation measures are implemented and having the intended effect. In addition, mitigation monitoring and reporting would be required for enrolled projects; although monitoring and reporting would be the responsibility of the provider of the mitigation (e.g., a bank, in-lieu fee program, or permittee-responsible mitigation), the HCP Administrator would provide the Service with a combined mitigation monitoring report for the enrolled projects. The following sections summarize monitoring and reporting that would occur under Alternative 1, which are described in detail in Section 5.4 of the HCP.

#### **Compliance Monitoring and Reporting**

The HCP Administrator would submit a draft annual compliance monitoring report to the Service on or before March 15 of each year following ITP issuance. A detailed list of the items that would be monitored within the Plan Area both annually and cumulatively over the ITP term and included in the annual compliance monitoring report are provided in Section 5.4.2 of the HCP. CI-holders would be obligated to provide the HCP Administrator with documentation of project-specific compliance (documentation of project-specific impacts and mitigation offsets). Documentation of compliance from the CI-holders would be appended to the annual compliance monitoring report and provided to the Service.

#### **Effectiveness Monitoring and Reporting**

The HCP Administrator would be responsible for monitoring the progress made towards achieving the HCP's biological goals and objectives, which would be documented in an effectiveness monitoring report and provided to the Service annually (Section 5.4.3 of the HCP). The reporting timeline and general reporting methods described above for compliance

monitoring would apply to the effectiveness monitoring report. Similarly, CI-holders would provide documentation to the HCP Administrator for project-specific minimization measures implemented to reduce impacts to suitable LEPC habitat, which would be appended to the effectiveness monitoring report. This report would also include a summary of the types and category of mitigation implemented, both for the reporting period and cumulatively.

### **Mitigation Monitoring and Reporting**

Mitigation monitoring would be designed to demonstrate the conservation of relatively large tracts of un-fragmented LEPC habitat. The requirements for mitigation monitoring include interim and long-term management and monitoring, as well as reporting. Mitigation monitoring reports would be submitted by the mitigation entities to the HCP Administrator annually. Each report submitted by the mitigation entities would include itemized accounts of the management tasks conducted during the reporting period in accordance with the project-specific mitigation contracts and management plans, as described in Section 5.4.4 of the HCP. The HCP Administrator would then compile the received mitigation monitoring reports and submit the reports to the Service using the same reporting timeline and general reporting methods as the annual compliance monitoring report described above.

#### **3.1.5 Adaptive Management**

Implementation of the HCP has been designed to allow for adaptive management throughout the 30-year ITP term. As Section 5.5 of the HCP describes in more detail, the annual monitoring and reporting process would be used as a regular check to determine whether the HCP is being implemented correctly, and if progression is occurring towards the goals and objectives of the HCP. The Service would work with the HCP Administrator to determine whether and what kind of adaptive management measures may be warranted, as well as the appropriate monitoring approach to refine any resulting adjustments to minimization and/or mitigation measures.

Over the 30-year ITP term, there is uncertainty in the extent of take by Covered Activities (although impacts to suitable LEPC habitat would be limited to 500,000 acres), and in the overall risk to LEPC due to changes in the availability and/or quality of habitat. This, in turn, could affect the distribution and/or number of LEPC individuals within the Plan Area. Because of these uncertainties, changes in conservation measures would be evaluated in relation to impacts to habitat, and, as needed, addressed through adaptive management responses. Specific adaptive management measures and responses are described in detail in Section 5.5 of the HCP.

### **3.2 Alternative 2: Issue an Enhancement of Survival Permit for a Candidate Conservation Agreement with Assurances**

Under Alternative 2, instead of issuing an ITP, the Service would issue an ESP to the Applicant for the Covered Activities described above in Section 3.1.1. The permit term for the ITP (Alternative 1) and ESP (Alternative 2) would be the same, at 30 years. Under this alternative, it is assumed the Applicant (in the role of CCAA Administrator) would require enrolled projects to implement all the avoidance, minimization, mitigation, monitoring, adaptive management, and reporting processes described in the HCP, which would be technically termed a CCAA under

this alternative. Therefore, the description of the HCP as described in Sections 3.1.1 through 3.1.5 for Alternative 1 would also apply to Alternative 2, with the exceptions of the time period available for enrollment in the programmatic permit, and the ability to enroll large tracts of land, providing coverage for multiple projects.

Under Alternative 2, qualifying landowners or developers could obtain a CI under the programmatic ESP only until the effective date of the final rule listing the LEPC. This differs from Alternative 1, under which individual qualifying projects would be able to apply for a CI under the process as described in Section 3.1.4 for the entire permit term, regardless of whether and when the LEPC is listed under the ESA. Any CIs issued under Alternative 2 prior to the official listing date would receive take coverage under Section 10 of the ESA for the remaining portion of the 30-year ESP term, but no additional CIs would be issued after the effective date of the listing.

Under Alternative 2, landowners or developers could obtain a CI that includes all of their property interests and may include more than one project (referred to as “all activities” enrollment option), as long as the application materials include all of the information needed to quantify the impact to LEPC habitat and the resulting mitigation requirement (i.e., the site-specific impact assessment has been conducted for lands where take coverage is requested, allowing the required mitigation ratio to be determined according to the SGP CHAT category in which the impacts would occur). In this way, a project that is planned, but not constructed, prior to listing the LEPC could be enrolled in the CCAA. However, after the effective date of the final rule listing the LEPC, oil and gas projects within the Plan Area on land that was not previously enrolled in the CCAA would need to pursue other avenues (avoid take, or apply for separate individual or programmatic ITPs under Section 10(a)(1)(B) of the ESA) to maintain compliance with the ESA.

It is unknown exactly when potential participating landowners or developers would enroll during the 30-year permit term; it is also unknown when and if the LEPC will be officially listed under the ESA. For purposes of the analysis in this EA, the Service assumes that the LEPC would be listed as early as May 2022 with an effective date in July 2022, providing a minimum time period of approximately 6 months for eligible landowners or developers to enroll in the CCAA under the programmatic ESP. Under Alternative 2, the Service assumes that landowners or developers would likely enroll larger areas of land under the CCAA, through an “all activities” enrollment option, soon after issuance of an ESP, prior to an LEPC listing decision, in order to take advantage of the legal certainties associated with the take authorization for any Covered Activities on those lands that occur after the listing decision. Under this assumption, it is likely that a similar amount of projects would effectively be enrolled under both Alternatives 1 and 2.

Because it is anticipated that a similar level of oil and gas development within the Plan Area would occur regardless of whether a programmatic ITP or a programmatic ESP is available, it is likely that Alternative 2 would result in a similar amount of overall acres of impacts associated with these types of development being enrolled in conservation plans (with associated mitigation) as Alternative 1. Early in the permit term, it is likely that many landowners and developers would enroll larger areas in the CCAA, through an “all activities” enrollment option in order to ensure take associated with the Covered Activities would be authorized if the LEPC is

listed. If the LEPC is listed, oil and gas projects within the Plan Area on land that was not previously enrolled in the CCAA would need to pursue other avenues to maintain compliance with the ESA, which would likely include implementation of conservation and mitigation plans for unavoidable impacts to LEPC.

### **3.3 Alternative 3: No-Action Alternative**

Under the No-Action Alternative, the Service would not issue an ITP or an ESP, and therefore a programmatic permitting structure would not be available for willing participants to apply for CIs. The Service assumes that many of the activities that would continue under the No-Action Alternative would include the Covered Activities described above in Section 3.1.1. While the LEPC remains unlisted, these otherwise potentially participating entities (i.e., oil and gas companies) would incorporate varying amounts of LEPC risk assessment, avoidance, and minimization measures in the design, construction, and operation of their projects. Conservation measures implemented would likely be associated with those directed by Federal, State, and local laws, policies, or regulations. Beyond what is required by Federal, State, and/or local agencies, the Conservation Programs would be implemented entirely at the discretion of the landowners and private developers.

If in the future the LEPC becomes federally listed, oil and gas projects would need to modify their design and/or operations under the No-Action Alternative to either avoid take, obtain an ITP under Section 7, or obtain an ITP under Section 10(a)(1)(B) of the ESA. As described in Section 1.1, the Service issued a Proposed Rule to list two DPSs of the LEPC under the ESA on June 1, 2021 (86 FR 29432). The Service will consider public comments received as well as new data that becomes available, and will issue a Final Rule in the FR (typically within one year of the date of the Proposed Rule), which will become effective 30 days later. Based on this timeline, the earliest the LEPC would be effectively federally listed as an endangered or threatened species is July 2022. Based on the large estimated buildout for oil and gas development within the Plan Area particularly during the early years of the permit term (see Table 4 of the HCP); the unpredictability of whether the LEPC will be listed under the ESA; and because the time of listing (if it occurs) is unknown, anticipating that project development would decline or that a reduced amount of LEPC habitat would be impacted if the LEPC becomes listed would be speculative and is not analyzed further in this EA.

Issuance of a programmatic ITP under Alternative 1, and to a lesser extent a programmatic ESP under Alternative 2, would allow for a greater number of projects to utilize a standardized enrollment process if the LEPC is listed. It is likely that issuance of a programmatic ITP under Alternative 1 or the issuance of a programmatic ESP under Alternative 2 would result in substantially more enrolled projects that would commit to following the avoidance, minimization, mitigation, monitoring, and adaptive management processes described above in Section 3.1, than the approach to LEPC protection that would occur under the No-Action Alternative.

#### **4 AFFECTED ENVIRONMENT**

The affected environment is the area and its resources (e.g., biological, physical, cultural) potentially impacted by the Proposed Action and alternatives. The affected environment includes portions of the Plan Area and includes all areas where the Covered Activities and Conservation Program (described in Section 3.1.3 of this EA and Chapter 5 of the HCP [Attachment A]) would occur. Because the Applicant is requesting authorization for incidental take of LEPC from habitat loss, fragmentation, and degradation associated with Covered Activities, our assessment focuses on areas where LEPC take may occur within the Plan Area.

A summary of our assessment of the affected environment is provided in Table 4-1, below. This EA presents a detailed analysis of those resources that would be subject to short- or long-term effects if a programmatic ITP or ESP is issued authorizing take of LEPC, which include the biological environment (vegetation; wildlife; and listed, proposed, and candidate species), the physical environment (land use, noise, visual resources), and cultural resources. Potential impacts to other resources (i.e., geology and soils, water resources, air quality, hazardous materials/waste, recreation, socioeconomic resources, and transportation) would be similar and minimized to the extent feasible under the three alternatives being considered; therefore, they are not discussed further.

While the affected environment includes all areas where the Covered Activities, including oil and gas development, would occur, the Service is not authorizing oil and gas development itself. Rather, the Service is making a decision on whether to authorize the take of LEPC that could occur as a result of oil and gas development. Oil and gas development is regulated by and under the jurisdiction of several federal agencies including, but not limited to, the Federal Energy Regulatory Commission (FERC), Pipeline and Hazardous Materials Safety Administration (PHMSA), and USEPA. Regulatory oversight by federal agencies is subject to a separate NEPA review that provides detailed analysis on the potential environmental impacts from oil and gas development. Similarly, oil and gas development is regulated at the state level (e.g., by the Railroad Commission of Texas, Colorado Department of Natural Resources' Colorado Oil and Gas Conservation Commission, Oklahoma Corporation Commission), which also includes review of potential environmental impacts associated with construction and operation.

**Table 4-1. Resources Considered and Rationale for Exclusion or Inclusion in Detailed Analysis.**

<b>Resource</b>	<b>Not Present</b>	<b>Present, Excluded from Detailed Analysis</b>	<b>Present, Included in Detailed Analysis</b>	<b>Rationale</b>
<b>Biological Environment</b>				
Vegetation			X	Each of the three alternatives <sup>1</sup> would result in both temporary and permanent impacts to vegetation (see Section 4.1.1).
Wildlife			X	Each of the three alternatives would affect locally occurring wildlife, likely resulting in both temporary and permanent impacts to wildlife (see Section 4.1.2).
Listed, Proposed, and Candidate Species			X	Each of the three alternatives may affect state- and/or federally listed, proposed, or candidate species, including the LEPC (see Section 4.1.3).
<b>Physical Environment</b>				
Air Quality		X		<p>Ground disturbing activities associated with each of the three alternatives would have similar, localized, and minor to moderate effects on air quality. Impacts would occur during construction, maintenance, and decommissioning of enrolled projects, and during grassland improvement and management activities associated with the Conservation Program. These activities would be conducted in accordance with federal, state, and local air permit requirements. Air quality impacts would primarily be associated with increased fugitive dust levels and combustion emissions near construction activities, and would not be expected to result in a violation of ambient air quality standards. These localized, minor to moderate effects would be distributed throughout the Plan Area over the 30-year permit term, spreading out impacts over time and space, and would be similar across the three alternatives. As such, air quality impacts associated with ground-disturbing activities is excluded from further analysis.</p> <p>Long-term impacts to air quality would primarily be associated with operation of aboveground facilities (e.g., compressor stations) associated with the enrolled projects. However, operation of enrolled projects is not a Covered Activity. As such, air quality impacts associated with operation of the enrolled projects are beyond the scope of this assessment and excluded from further analysis.</p>
Geology		X		Each of the three alternatives would result in localized, similar effects to geology during ground disturbance, including blasting, associated with enrolled projects and restoration activities. Blasting would be minimized during the LEPC breeding season. Enrolled projects would be developed in accordance with all applicable federal, state, and local regulations, and industry standard best management practices would be employed. Therefore, impacts to geology would be localized, spread throughout the Plan Area, and similar across the three alternatives. As such, impacts to geological resources are excluded from further analysis.

**Table 4-1. Resources Considered and Rationale for Exclusion or Inclusion in Detailed Analysis.**

Resource	Not Present	Present, Excluded from Detailed Analysis	Present, Included in Detailed Analysis	Rationale
Hazardous Materials/Waste		X		<p>Ground disturbing activities associated with each of the three alternatives would have similar, localized, and minor effects associated with hazardous materials and waste. Impacts could occur during construction, maintenance, and decommissioning of enrolled projects, and during grassland improvement and management activities associated with the Conservation Program. To minimize potential release of hazardous materials, enrolled projects would implement project-specific Spill Prevention, Control, and Countermeasure Plans (SPCC Plan) in accordance with 40 CFR part 112; activities would also be conducted in accordance with federal, state, and local permit requirements, and industry-standard best management practices would be implemented. With the implementation of these measures, impacts associated with the release of hazardous materials and waste would be localized, minor, and similar across the three alternatives. As such, impacts associated with hazardous materials and waste are excluded from further analysis.</p> <p>Operation of enrolled projects is not a Covered Activity. As such, potential impacts associated with a release of hazardous materials or waste resulting from operation of the enrolled projects are beyond the scope of this assessment and excluded from further analysis.</p>
Land Use			X	<p>Each of the three alternatives would result in both temporary and permanent impacts to land use (including potential impacts to areas classified as prime farmlands or farmland of statewide importance) within the Plan Area (see Section 4.2.1).</p>
Noise			X	<p>Each of the three alternatives would result in both short-term impacts to noise levels within the Plan Area (see Section 4.2.2).</p>
Soils		X		<p>Ground disturbing activities associated with each of the three alternatives would have similar, localized effects on soils. Impacts to soils would occur during construction, maintenance, and decommissioning of enrolled projects, and during grassland improvement and management activities associated with the Conservation Program. To minimize adverse impacts to soils, enrolled projects would implement project-specific SPCC Plans, Stormwater Pollution Prevention Plans (SWPPP), and restoration plans; activities would also be conducted in accordance with federal, state, and local permit requirements, and industry-standard best management practices would be implemented. With the implementation of these measures, adverse impacts to soils would be localized, minor, and similar across the three alternatives. As such, impacts to soils are excluded from further analysis.</p>
Visual Resources			X	<p>Each of the three alternatives would result in impacts to visual resources within the Plan Area (see Section 4.2.3).</p>

**Table 4-1. Resources Considered and Rationale for Exclusion or Inclusion in Detailed Analysis.**

Resource	Not Present	Present, Excluded from Detailed Analysis	Present, Included in Detailed Analysis	Rationale
Water Resources		X		<p>Impacts to water resources would occur during construction, maintenance, and decommissioning of enrolled projects, and during grassland improvement and management activities associated with the Conservation Program. These activities would be conducted in accordance with federal (e.g., Sections 401, 402, and 404 of the Clean Water Act), state (e.g., isolated wetlands permits, floodplain permitting), and local permit requirements. Enrolled projects would also minimize impacts to water resource by implementing project-specific SPCC Plans and SWPPPs, and industry-standard best management practices would be implemented. With the implementation of these measures, adverse impacts to water resources would be localized, minor, and similar across the three alternatives. As such, impacts to water resources are excluded from further analysis.</p> <p>Implementation of the Conservation Program under Alternatives 1 and 2 would result in preservation or restoration of LEPC habitat in lands that would not be impacted under the No-Action Alternative. Activities associated with the Conservation Program would occur within upland grassland habitat; therefore, impacts to water resources would likely be limited to a decrease in sediment or nutrient inputs to surface waters from due to the conversion of cultivated croplands to upland grasslands. These impacts would be minor, beneficial, and distributed throughout the Plan Area. As such, water resources are excluded from further analysis.</p>
<b>Other Resources</b>				
Cultural Resources			X	<p>LEPC habitat within the Plan Area likely includes both known and unknown cultural resources. Implementation of each of the three alternatives could result in impacts to cultural resources (see Section 4.3).</p>
Recreation		X		<p>Publicly accessible recreational areas that are managed by state or federal agencies for sensitive species or resources would be precluded from being impacted by the Covered Activities under Alternatives 1 and 2 (see Sections 1.5 and 1.7 of the HCP), and would likely be avoided to the extent feasible during project development under Alternative 3 (No-Action).</p> <p>Enrolled projects may be located in close proximity to state- or federally managed recreational areas, and may occur within or near privately or locally owned recreational areas (e.g., parks, ranches, hunting lands). Impacts to these recreational areas would primarily be limited to increased noise and visual impacts associated with construction activity, but could also include permanent visual impacts associated with aboveground facilities and the conversion of forested habitat to grassland along pipeline right-of-ways. These impacts are expected to be minor and would be similar under each of the three alternatives. Therefore, recreation has been excluded from further analysis.</p>

**Table 4-1. Resources Considered and Rationale for Exclusion or Inclusion in Detailed Analysis.**

Resource	Not Present	Present, Excluded from Detailed Analysis	Present, Included in Detailed Analysis	Rationale
Socioeconomics		X		<p>Each of the three alternatives would likely have both short- and long-term socioeconomic impacts. During construction, socioeconomic impacts would primarily be associated with an increased number of local construction jobs and the purchase of goods and materials in the communities where construction activities occur. Because these impacts would be temporary, minor, spread throughout the Plan Area and the permit term, and they would be similar under each of the alternatives considered, they are excluded from further analysis.</p> <p>Long-term impacts to the economy would primarily be associated with state, county, and local tax payments associated with operation of the enrolled projects. However, operation of enrolled projects is not a Covered Activity. As such, long-term socioeconomic impacts are beyond the scope of this assessment and excluded from further analysis.</p>
Transportation		X		<p>Each of the three alternatives would have limited temporary effects on transportation during construction of enrolled projects and restoration activities, respectively. Impacts to transportation associated with construction would typically be limited to temporary increases in traffic levels on roads in the vicinity of construction activities and increased wear on roads due to construction vehicle traffic (primarily due to vehicle weight). Construction and restoration activities would be conducted in accordance with road permit requirements, which typically include conditions to both minimize impacts to local traffic and to repair damage to roadways. Because these impacts would be temporary, minor, spread throughout the Plan Area and the permit term, and they would be similar under each of the alternatives considered, they are excluded from further analysis.</p>
<p><sup>1</sup> Implementation of Alternative 1 (Proposed Action) and Alternative 2 (Issue and ESP for a CCAA) would include the Covered Activities (described in Section 3.1.1) and mitigation (described in Section 3.1.3). Implementation of Alternative 3 (No-Action Alternative) would include the same types of activities associated with oil and gas development described in Section 3.1.1, but because no permit would be issued, they are not referred to as Covered Activities.</p>				

## 4.1 Biological Environment

### 4.1.1 Vegetation

This section describes vegetation types within the Plan Area that could be impacted by the Covered Activities and the Conservation Program, focusing on the vegetation communities that support LEPC occupancy (i.e., herbaceous and hay/pasture land cover types [approximately 32% and less than 1% of the Plan Area, respectively; Table 2 in the HCP]). Other prominent vegetation communities within the Plan Area include cultivated cropland (33%) and shrub/scrub (29%), with the remaining vegetation communities each accounting for less than 1% of the Plan Area. While cultivated croplands may be converted to LEPC habitat as mitigation, this is not considered a natural vegetation community, so our analysis regarding cultivated croplands is focused more on land use implications (see Section 4.2.1).

The Plan Area lies primarily within the South-Central Semi-Arid Prairies Level II Ecoregion, with a small portion extending into the Warm Deserts Level II Ecoregion in the southwest. Within the South-Central Semi-Arid Prairies Ecoregion, the Plan Area is subdivided into the High Plains, Southwestern Tablelands, and Central Great Plains Level III Ecoregions. The southwestern portion of the Plan Area that extends into the Warm Deserts Ecoregion is further classified as the Chihuahuan Desert Level III Ecoregion (U.S. Environmental Protection Agency [USEPA] 2017). Characteristics of each of the ecoregions within the Plan Area are described briefly below (USEPA 2013).

- **High Plains Ecoregion** is characterized by smooth to slightly irregular plains with a large percentage of the ecoregion planted in cropland. Portions of the Plan Area in eastern Colorado, western Kansas, the Oklahoma panhandle, eastern New Mexico, and western Texas are within this ecoregion.
- **Southwestern Tablelands Ecoregion** surrounds the High Plains ecoregion and are composed of several canyons, badlands, mesas, and dissected river banks that preclude the area from being used as cultivated croplands. Most of the Southwestern Tablelands are sub-humid grasslands and semiarid rangelands. Within the Plan Area, the Southwestern Tablelands fall adjacent to the High Plains in eastern Colorado, southwestern Kansas, the Oklahoma panhandle, eastern New Mexico, and northwest Texas.
- **Central Great Plains Ecoregion** occurs at lower elevations within the Plan Area, receive more precipitation, and are now mostly cropland for winter wheat. The remainder of the Plan Area in central Kansas, central Oklahoma, and small areas of land in northwest Texas are within this ecoregion.
- **Chihuahuan Desert Ecoregion** is characterized by vast expanses of desert grassland and arid shrubland due to desertification and over-grazing, with islands of oak, juniper, and pinyon pine woodland at higher elevations. Within the Plan Area, this ecoregion only occurs in southeast New Mexico and southwest Texas.

The Plan Area occurs primarily within three Major Land Resource Areas (MLRA), as defined by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). For each MLRA, the NRCS has defined the dominant physical and biological characteristics, including plant species that the area can support. Given the large scale of the Plan Area, which

includes portions of five states, MLRA data was used to describe the primary vegetation communities present that could be affected by implementation of the HCP.

The western portion of the Plan Area is within the Western Great Plains Range and Irrigation Region, which primarily overlaps the High Plains and Southwestern Tablelands ecoregions. This MLRA supports short or mid prairie grasses such as sand bluestem (*Andropogon hallii*), needle and thread (*Hesperostipa comata*), prairie junegrass (*Koeleria macrantha*), blue grama (*Bouteloua gracilis*), sideoats grama (*Bouteloua curtipendula*), galleta (*Pleuraphis* spp.), threeawn (*Aristida* spp.), ring muhly (*Muhlenbergia torreyi*), alkali sacaton (*Sporobolus airoides*), and western wheatgrass (*Pascopyrum smithii*). (NRCS 2006)

The central and eastern portions of the Project area are within the Central Great Plains Winter Wheat and Range Region, which primarily overlaps the Central Great Plains ecoregion, but also includes some area within the High Plains and Southwestern Tablelands. This MLRA supports mixed grass prairies such as buffalograss (*Bouteloua dactyloides*), blue grama, sideoats grama, hairy grama (*Bouteloua hirsuta*), sand bluestem, and little bluestem (*Schizachyrium scoparium*). Woody shrubs such as *Yucca* spp., catclaw (*Senegalia* spp.), sand sage (*Artemisia filifolia*), shin oak (*Quercus havardii*), and skunkbush (*Rhus trilobata*) are also present as a smaller proportion of the natural vegetation throughout the region. (NRCS 2006)

The portion of the Plan Area that extends into the Chihuahuan Desert ecoregion falls primarily within the Southwest Plateaus and Plains Range and Cotton Region MLRA. This MLRA supports a shrub and short-grass plant community, with juniper (*Juniperus* spp.), mesquite (*Prosopis* spp.), lotebush (*Ziziphus obtusifolia*), shin oak, sumac (*Rhus* spp.), Texas pricklypear (*Opuntia engelmannii*), tasajillo (*Cylindropuntia leptocaulis*), kidneywood (*Eysenhardtia* spp.), agarito (*Mahonia trifoliolata*), yucca, eggleaf silktassel (*Garrya ovata*), catclaw, Texas persimmon (*Diospyros texana*), sideoats grama, threeawn, Texas grama (*Bouteloua rigidiseta*), hairy grama, curly-mesquite (*Hilaria belangeri*), buffalograss, and hairy woolygrass (*Erioneuron pilosum*). (NRCS 2006)

## 4.1.2 Wildlife

### 4.1.2.1 General Wildlife

This section describes those wildlife species that are considered common within the Plan Area, and are not identified by federal or state agencies as at-risk species that require special management. As stated above (see Section 4.2.1), LEPC habitat, shrub-scrub, and cultivated croplands compose over 90% of the Plan Area, with other habitat types not occupying more than 1% of the Plan Area. Therefore, this discussion focuses on wildlife species that utilize these habitats.

The High Plains, Southwestern Tablelands, and Central Great Plains ecoregions support a variety of common wildlife species. Mammals that may occur include mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), pronghorn antelope (*Antilocapra americana*), coyote (*Canis latrans*), jackrabbit (*Lepus townsendii*, *californicus*), cottontail (*Sylvilagus floridanus*), American badger (*Taxidea taxus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and black-tailed prairie dog (*Cynomys ludovicianus*). Common bird species include wild turkey (*Meleagris gallopavo*), ring-necked pheasant (*Phasianus colchicus*), Canada goose (*Branta*

*canadensis*), scaled quail (*Callipepla squamata*), bobwhite quail (*Colinus virginianus*), and mourning dove (*Zenaida macroura*). Common bird groups in the region include songbirds, corvids (jays and crows), waterfowl, waterbirds, and raptors. Additional species that are more common in the Chihuahuan Desert ecoregion are collared peccary (*Pecari tajacu*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*), opossum (*Didelphis virginiana*), and white-winged dove (*Zenaida asiatica*; NRCS 2006). A wide variety of snakes, lizards, frogs, and toads also commonly occur throughout the Plan Area (NatureServe 2021).

There are several protected lands within the Plan Area, including national wildlife refuges, national forests, state wildlife management areas, conservation easements, and public lands managed by the Bureau of Land Management (BLM). These areas are precluded from the Covered Activities under the HCP (see Section 1.5 of Attachment A).

#### **4.1.2.2 Eagles**

Bald eagles occur throughout the Plan Area year-round (eBird 2020). Golden eagles, while less common than bald eagles, also occur throughout the Plan Area year-round, but are more common in the western portion of the Plan Area (i.e., portions of the Plan Area in Colorado, New Mexico, and western Texas; National Eagle Center 2020; Service 2016a).

Both bald and golden eagles are more common in the Plan Area from early fall through late spring (eBird 2020). This period corresponds with the nonbreeding migration season and the increase of bald and golden eagles beginning in the fall is likely attributed to the influx of nonbreeding migratory individuals. Bald and golden eagles often migrate along major river systems, which are largely absent from the Plan Area. Suitable stopover habitat for bald eagles may exist within the Plan Area. For bald eagles, this would be primarily within herbaceous and wetland areas or cultivated croplands that attracts migrating waterfowl (Mersmann 1989, McClelland et al. 1996). For golden eagles, suitable stopover habitat would be primarily within herbaceous and shrubland areas, with avoidance of fragmented areas or cultivated croplands (Marzluff et al. 1997).

Although bald and golden eagles are not expected to use LEPC habitat frequently, both species may forage within LEPC habitat. Additionally, it is possible that both species could potentially nest in scattered trees within LEPC habitat; however, this would be more likely for bald eagles than golden eagles.

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

Covered Activities and the Conservation Program described in Chapters 2 and 5 of the HCP, respectively would not occur in aquatic or forested habitats, and therefore effects to species dependent upon those habitats are not anticipated. A total of 59 federally listed, proposed, or candidate species may occur within the Plan Area (see Attachment B). Of these, 16 species occur within suitable LEPC habitat (defined in the HCP as land cover types classified as herbaceous or hay/pasture by the National Land Cover Database [Yang et al. 2018, Multi-Resolution Land Characteristics 2019), shrub-scrub habitat, or cultivated croplands (see Table 4-2). An additional 38 state-listed endangered and threatened species have the potential to occur in the Plan Area within these habitats (see Attachment B). These include five mammals, 14 birds, three amphibians, seven reptiles, one invertebrate, and eight plants (Attachment B).

OIL AND GAS  
PROPOSED HCP AND ITP FOR LESSER PRAIRIE-CHICKEN**Table 4-2. Federally listed Species<sup>1</sup> with the Potential to Occur in suitable LEPC habitat within the Plan Area for the Oil and Gas Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes
<b>Mammals</b>			
Black-footed ferret <i>Mustela nigripes</i>	FE	SE – CO, KS	Limited to open habitat such as semi-arid grasslands, steppe, and shrub steppe. Black-footed ferrets are limited by prairie dog occurrence, as they depend on prairie dogs for food and prairie dog burrows for shelter (Service 2013b).
New Mexico meadow jumping mouse <i>Zapus hudsonius luteus</i>	FE	SE – NM	Riparian communities and adjacent uplands in grassland and shrub-scrub habitats with tall, emergent herbaceous forbs and sedges (Service 2014c).
Penasco least chipmunk <i>Tamias minimus atristriatus</i>	FC	SE – NM	Subalpine Thurber's fescue meadow with deciduous shrubs or upper montane coniferous forest (Frey and McKibben 2018).
Preble's meadow jumping mouse <i>Zapus hudsonius preblei</i>	FT	ST – CO	Dense, herbaceous riparian habitat and adjacent upland grasslands (Service 2018).
<b>Birds</b>			
Northern Aplomado falcon <i>Falco femoralis septentrionalis</i>	FE, EXPN	SE – NM, TX	Open terrain with scattered trees or shrubs such as yucca-covered sand ridges in coastal prairies, riparian areas adjacent to grasslands, and in desert grasslands with scattered mesquite and yucca (Service 1990).
Southwestern willow flycatcher <i>Empidonax traillii exermis</i>	FE	SE – CO, NM, TX	Dense, forested riparian habitats are required for nesting; however, migration and foraging habitat includes old field, shrubland/chaparral, and mixed hardwood forest (NatureServe 2021).
Whooping Crane <i>Grus Americana</i>	FE, EXPN, DCH	SE – CO, KS, NM, TX	Coastal marshes and estuaries, inland marshes, lakes, ponds, riparian areas, wet meadows and rivers, and agricultural fields (NatureServe 2021).
<b>Invertebrates</b>			
American Burying Beetle <sup>2</sup> <i>Nicrophorus americanus</i>	FT, EXPN	SE – KS	Occurs in a variety of habitats, such as grassland, shrubland, and hardwood forests. May occur in areas with mowed or grazed fields to dense shrub areas. Adults typically live aboveground, but may overwinter in soil and lay eggs in soil next to buried carcasses. (NatureServe 2021)
Monarch Butterfly <sup>2</sup> <i>Danaus plexippus</i>	FC	NL	Adult monarch butterflies feed on nectar from a wide variety of flowers, but larvae only feed on milkweed ( <i>Asclepias</i> spp.). Adults feed in fields, along roads, open areas, wet areas, and gardens on milkweeds and other flowering plants. Breeding only occurs where there are milkweed plants (U.S. Forest Service 2021)
<b>Flowering Plants</b>			
Bunched cory cactus <i>Coryphantha ramillosa</i>	FT	ST – TX	Chihuahuan Desert succulent scrub on rocky slopes, ledges, and gravelly limestone flats (NatureServe 2021).
Gypsum wild-buckwheat <i>Eriogonum gypsophilum</i>	FT	SE – NM	Semi-arid open grassland dominated by grama species and creosote bush ( <i>Larrea tridentata</i> ) communities (NatureServe 2021).
Kuenzler hedgehog cactus <i>Echinocereus fendleri</i> var. <i>kuenzleri</i>	FT	SE – NM	Grassland and herbaceous habitat on the fringes of pinyon-juniper savannah (NatureServe 2021).
Lloyd's mariposa cactus <i>Echinomastus mariposensis</i>	FT	ST – TX	Arid desert and shrubland/chaparral habitats with gravelly, limestone-derived soils on gentle slopes (NatureServe 2021).

**Table 4-2. Federally listed Species<sup>1</sup> with the Potential to Occur in suitable LEPC habitat within the Plan Area for the Oil and Gas Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes
Sneed pincushion cactus <i>Coryphantha sneedii</i> var. <i>sneedii</i>	FE	SE – NM, TX	Desert and desert grassland habitats with limestone ledges and slopes dominated by creosote bush, yucca species, and grama species (NatureServe 2021).
Texas poppy-mallow <i>Callirhoe scabriuscula</i>	FE	SE – TX	Grasslands, shin oak shrublands, and mesquite woodlands with deep, loose sandy soil from alluvial deposits of the Colorado River (NatureServe 2021).
Tobusch fishhook cactus <i>Sclerocactus breviphamatus</i> ssp. <i>Tobuschii</i>	FT	SE – TX	Riparian areas and adjacent shortgrass grasslands and semi-desert shrublands interspersed with oak-juniper woodlands (NatureServe 2021).

FE = federally endangered, FT = federally threatened, FC = candidate for federal listing, DCH = designated critical habitat, SE = state endangered, ST = state threatened, EXPN = population is experimental, non-essential in survival of the overall species

<sup>1</sup> Federally listed species with the potential to occur within the Plan Area, but that are not expected to occur in similar habitat as the LEPC are considered unlikely to be affected by the issuance of an ITP or ESP; therefore, these species are not included in Table 4-2 and have been dismissed from detailed analysis. A list of each of the federally listed species with potential to occur within the Plan Area is included in Attachment B.

<sup>2</sup> Identified through our state-level threatened and endangered species analysis as potentially occurring within the Plan Area but not identified through the Information for Planning and Consultation Tool (IPaC; Service 2021b)

Critical habitat has been designated for 15 species (one bird, four fish, eight aquatic invertebrates, and two flowering plants) within the Plan Area (see Attachment B). Of these, only designated critical habitat for the whooping crane includes LEPC habitat, shrub-scrub, or cultivated croplands, and each of the three critical habitat units within the Plan Area is located within lands managed by a state or federal agency (e.g., Waterfowl Management Areas, National Wildlife Refuges), which are precluded from the Covered Activities under the HCP.

As discussed in Section 3 of this EA and Section 1.7 of the HCP, the issuance of an ITP or ESP would only authorize incidental take of LEPC associated with otherwise lawful activities. Projects seeking to enroll in the HCP or CCAA and obtain coverage would be required to provide documentation of ESA compliance for species not covered under the programmatic permit as part of the application package, which would be reviewed by both the Applicant and the Service (see Section 8.4 of the HCP). Similarly, enrolled projects would be required to adhere to state regulations relating to state-listed endangered and threatened species (see Attachment B). Therefore, the remainder of this section focuses on the affected environment as it relates to the LEPC.

The LEPC requires large parcels (1,200 – 25,000 acres) of undisturbed, high quality native grassland and shrubland to maintain self-sustaining populations (Bidwell 2002, Van Pelt et al. 2013, Sullins et al. 2019). Preferred habitats include short and mixed grass prairies with grass species such as sand bluestem, little bluestem, buffalograss, various dropseeds (*Sporobolus* spp.), and various grammas. Sand sagebrush or shin oak make up the dominant shrub types in ideal LEPC habitats to provide summer and winter protection and act as a supplemental food source (Service 2010). Within an individual's home range, sufficient lekking/breeding habitat, nesting habitat, brood habitat, and autumn/winter habitat must be available to support a sustainable

LEPC population. Additional details regarding the specific habitat characteristics required to fulfill the LEPC life history needs can be found in Section 3.4 of Attachment A.

LEPC populations have drastically declined within the past 200 years and the species currently only occupies 16% of its historical range. Population declines are attributable to habitat loss, degradation, and fragmentation primarily due to native prairies being converted to cultivated croplands and, to a lesser extent, human population growth and energy development (Service 2014a, Evans and Li 2017). Studies have shown that LEPC will avoid tall structures on the landscape, such as drill rigs, wind turbines, communication towers, and transmission lines, and appear to be displaced by many forms of energy development (see Section 3.6.3 of the HCP [Attachment A]). Additional details regarding population trends and threats to the LEPC can be found in Sections 3.5 and 3.6 of Attachment A.

The LEPC occupies 27,259 square miles of grassland/shrubland communities in portions of Colorado, Kansas, New Mexico, Oklahoma, and Texas (Figure 4-1; Service 2013a, Van Pelt et al. 2013). The LEPC range is divided into four regions based on the dominant vegetation communities utilized by LEPC: Shinnery Oak Prairie, Sand Sagebrush Prairie, Mixed Grass Prairie, and Shortgrass/Conservation Reserve Program (CRP) Mosaic (Figure 4-1). Each of these regions is targeted for LEPC habitat restoration and conservation in the HCP (Attachment A).

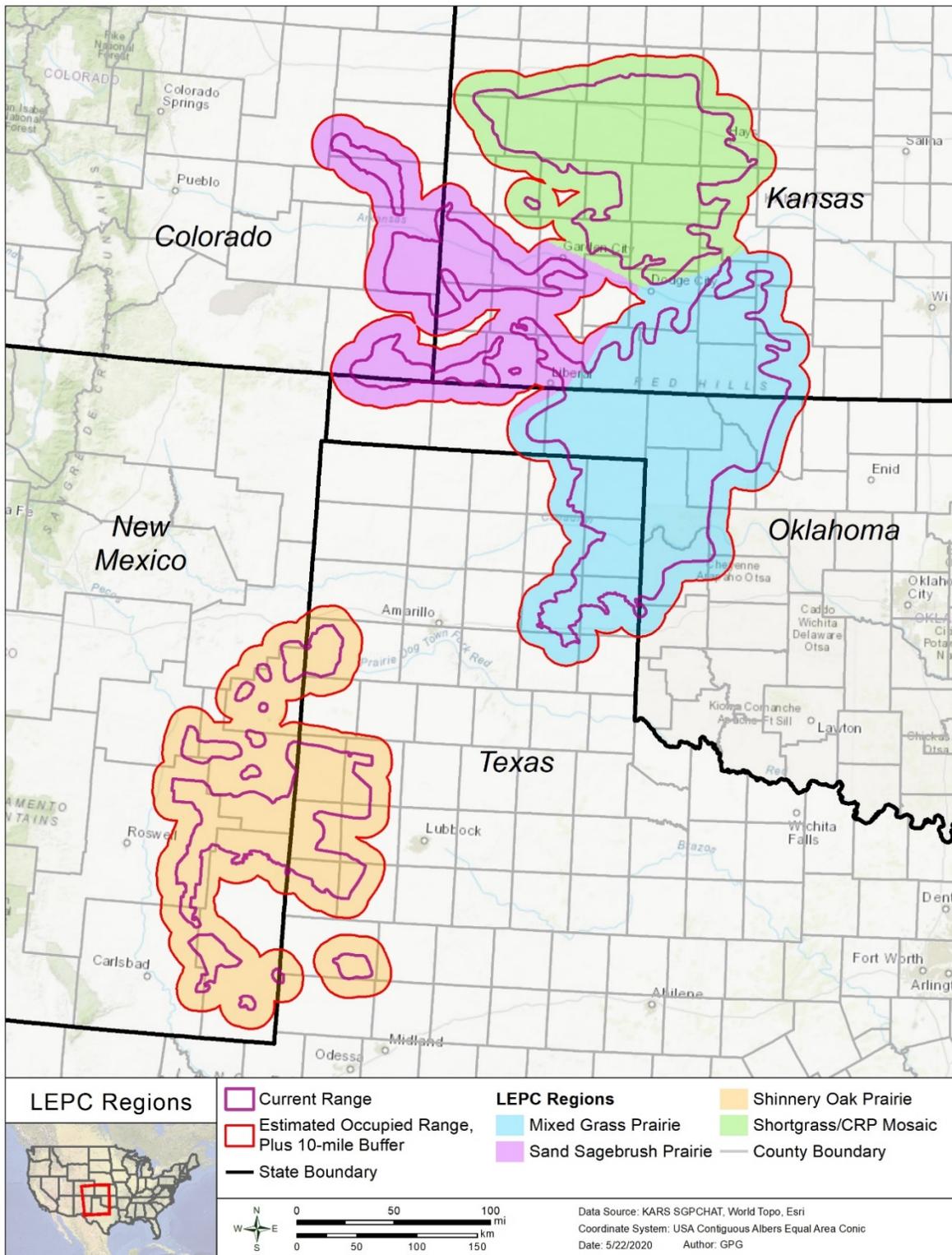
A focused, large-scale survey effort for LEPC began in 2012 to estimate and track population size and assess population trends across the species range. Aerial surveys for leks throughout the region and the use of improved models has resulted in an increased estimated detection probability of larger clusters of LEPC. Annual population size was estimated from 2012 through 2018, and again in 2020 (see Table 1 in the HCP; Service 2021c based on Nasman et al. 2020), averaged over the most recent five years of surveys (2015-2020; surveys were not conducted in 2019; Service 2021c), the population was estimated at 27,384 individuals range-wide (see Section 3.5 of the HCP [Attachment A]). Population distribution was estimated for each of the four LEPC habitat regions shown on Figure 4-1: Shinnery Oak Prairie (11% of the LEPC population), Sand Sagebrush Prairie (4%), Mixed Grass Prairie (22%), and Shortgrass/CRP Mosaic (62%; Nasman et al. 2020, Service 2021c). The *2021 Species Status Assessment for the Lesser Prairie Chicken (Tympanuchus pallidicinctus)* provides the most relevant and best available science regarding LEPC (Service 2021c).

## **4.2 Physical Environment**

### **4.2.1 Land Use**

The dominant land cover types within the Plan Area are cultivated croplands (33% of the Plan Area), suitable LEPC habitat (herbaceous lands [32%] and hay/pasture [0.6%]), and shrub-scrub (29%); of the remaining 8% of the Plan Area, only developed, open space (e.g., roads) accounts for more than 1% of the Plan Area. Portions of the Plan Area are also designated as either prime farmland (38%) or farmland of statewide importance (13%; NRCS 2020). Prime farmlands are designated as such because of soils having the ideal combination of both physical and chemical characteristics for food, feed, forage, fiber, and oilseed crop production (NRCS 2020). Farmland of statewide importance is generally land that does not meet the requirements for prime farmland but produces an economically similar crop yield (NRCS 2020).

OIL AND GAS  
 PROPOSED HCP AND ITP FOR LESSER PRAIRIE-CHICKEN



**Figure 4-1. Estimated occupied range of lesser prairie-chicken in Colorado, Kansas, New Mexico, Oklahoma, and Texas.**

Within the Western Great Plains Range and Irrigated Region, approximately 88% of the land is privately owned and is primarily used for rangeland for cattle grazing and some sheep. Where irrigation is possible, crops such as alfalfa, sugar beets, grain sorghum, melons, seed crops, corn, small grains, onions, and other vegetables are the main crop types. About 99% of the land in the Central Great Plains Winter Wheat and Range Region is privately owned, with farms and ranches making up nearly all of the private land in this area. Winter wheat is the principal crop, but soybeans, corn, alfalfa, grain sorghum, cotton, and peanuts are also commonly grown. The grassland in the area is used mainly as rangeland for beef cattle. Similarly, the Southwest Plateaus and Plains Range and Cotton Region is primarily comprised of ranches for livestock grazing and wildlife habitat. (NRCS 2006)

#### **4.2.2 Noise**

The level of ambient noise represents the total amount of background noise in an area and can be used to estimate the impacts of a new noise source relative to existing conditions. Ambient noise levels in high density urban areas are typically much higher than noise levels in lower density residential or rural areas (California Department of Transportation 2013). The Plan Area is made up primarily of rural communities (U.S. Census Bureau 2018), and therefore most of the Plan Area likely has low levels of ambient noise. New noise sources may be more discernable in rural areas with low existing ambient noise levels than in urban areas with high ambient noise levels.

Areas that are considered sensitive to noise impacts are often referred to as “noise sensitive areas” (Federal Aviation Administration 2013, U.S. Department of Agriculture 2016, Federal Energy Regulatory Commission 2017). These include, but are not limited to, private residences, libraries, schools, hospitals, and other care facilities. Given the lower population density (U.S. Census Bureau 2020), rural settings are likely to have fewer noise sensitive areas that would potentially be affected by noise than urban settings.

#### **4.2.3 Visual Resources**

Visual resources or “aesthetics” refer to the human perception of natural beauty on the landscape and the scenic qualities of an area. Attempting to measure aesthetics is subjective and differs from person to person. Visual resources can be measured by their uniqueness and the emotion or feeling they can invoke.

While specific visual resources for the enrolled projects are not available at this time, the landscapes within the proposed Plan Area are generally not considered unique within the region and represent the typical landscapes associated with the High Plains, Southwestern Tablelands, Central Great Plains, and Chihuahuan Desert ecoregions. As stated above, there are several protected lands within the Plan Area that could be considered unique or scenic vistas (e.g., national wildlife refuges, national forests); however, these areas are precluded from the Covered Activities under the HCP (see Section 1.5 of Attachment A). The Plan Area represents relatively large, undeveloped, open areas with dispersed rural communities. Based on the large size of the Plan Area, enrolled projects would likely be located in areas considered a background view for most observers. The number of viewers is expected to be relatively low, as enrolled projects will likely be located within rural portions of the Plan Area.

### 4.3 Cultural Resources

Cultural resources include prehistoric or historic districts, sites, buildings, structures, objects, or properties of traditional religious and cultural importance that meet the requirements for the National Register of Historic Places (NRHP); sacred sites; and lands or sites of contemporary cultural importance.

While site-specific information for enrolled projects is unavailable at this time, it is likely that both identified and unidentified cultural resources are present within the Plan Area. As stated in the HCP, lands registered on the NRHP are precluded from the Covered Activities under the HCP (see Section 1.5 of Attachment A). As described in detail in Appendix B, Worksheet 8 of the HCP (see Attachment A), prospective CI-holders would work with a cultural resources professional who meets the Secretary of Interior's Professional Qualifications Standards (36 CFR Part 61), to assist the Service in fulfilling the requirements of Section 106 of the NHPA and its implementing regulations. Prospective CI-holders, with the assistance of their cultural resource professional, would coordinate with the appropriate Service Ecological Services Field Office, State Historic Preservation Office (SHPO), and Tribal Historic Preservation Office (THPO) to support consultation between the Service and the SHPO under Section 106 of the NHPA (see Appendix B, Worksheet 8 of the HCP).

## 5 ENVIRONMENTAL CONSEQUENCES

NEPA requires federal agencies to consider whether the effects of the proposed action are significant and the degree of the effects of the action, including connecting actions (40 CFR 1501.3(b) and 40 CFR 1501.9(e)(1)). NEPA requires that in considering effects to the potentially affected environment, agencies should consider the affected area (national, regional, or local) and its resources (40 CFR 1501.3(b)(1)). To determine the degree of the effects of the action, federal agencies "should consider the following, as appropriate to the specific action: (i) Both short- and long-term effects. (ii) Both beneficial and adverse effects. (iii) Effects on public health and safety. (iv) Effects that would violate Federal, State, Tribal, or local law protecting the environment" ((40 CFR 1501.3(b)(2)). A description of the Plan Area setting is provided below, to put the Plan Area in context for analyzing the biological, physical, and cultural resources discussed in this section.

The Plan Area overlaps five U.S. states, all within the southern Great Plains, including portions of Colorado, Kansas, New Mexico, Oklahoma, and Texas (Figure 1-1). In Colorado, the Plan Area overlaps 11 of 64 counties in the southeastern portion of the state (17%). In Kansas, the Plan Area overlaps 44 of 105 counties (42%), encompassing most of the western half of the state. The Plan Area overlaps 13 of 33 counties in eastern New Mexico (39%). Within Oklahoma, 30 of 77 counties overlap the Plan Area (39%), including the panhandle and other western areas. In Texas, the Plan Area overlaps 65 of 254 counties (26%) in the northwest portion of the state. The Plan Area encompasses the estimated occupied LEPC range plus a 10-mile buffer (Figure 1-1), and an additional 51,865,976 acres of land not currently within the occupied LEPC range or 10-mile buffer. In other words, the LEPC estimated occupied range plus a 10-mile buffer makes up 44% of the Plan Area, while 56% of the Plan Area falls outside of the LEPC range and buffer areas. The impacts to LEPC associated with oil and gas development would be localized in

nature and distributed throughout the Plan Area and the 30-year permit term, dispersing the total impacts over time and space.

This section describes the environmental effects of each of the alternatives retained for detailed analysis. Each of the alternatives would include a similar level of oil and gas development over a 30-year period within the Plan Area. The three alternatives differ with respect to whether a programmatic ITP, programmatic ESP, or neither programmatic permitting mechanism is granted, along with the associated level of commitment to minimizing and mitigating effects to the LEPC and its habitat. As described in Section 3.2, above, the Covered Activities and the Conservation Program described in the HCP would apply to both Alternatives 1 and 2. Therefore, the environmental consequences associated with Alternatives 1 and 2 are expected to be similar and are analyzed together, below.

Per the CEQ guidelines, impacts due to reasonably foreseeable actions within the Plan Area should be analyzed. Past and present actions within the Plan Area include conversion of native habitats to cultivated croplands or grazing lands, energy generation, transmission projects and, to a lesser extent, urban and rural development. Reasonably foreseeable oil and gas development was estimated in the Applicant's HCP (see Section 4.3). In general, oil and gas production is expected to happen primarily in the near term, with a plateau early in the ITP term (2022 for oil and 2025 for natural gas) through 2050. This near term development is expected to require production of 1,712 new oil and gas well pads and supporting infrastructure and 3,408 miles of pipelines and associated facilities (Section 4.3 of Appendix A). Taking the expected oil and gas production plateau into account, approximately 3,000 additional oil and gas well pads and 5,000 additional miles of pipelines are expected to be developed throughout the remainder of the ITP term. While some of this development would be covered under the HCP or CCAA through enrolled projects, there would still likely be substantial oil and gas development beyond what is associated with this programmatic permit.

Other reasonably foreseeable future actions within the Plan Area include 6,143 MW of wind development, 3,651 MW of solar development, 1,000 miles of power lines, and 1,134 new communication towers (LPC Conservation LLC 2021). While some of this development may be covered under the LEPC Renewables HCP or CCAA (Service 2021a) if authorized through enrolled projects, there would still likely be substantial wind, solar, power line, and communication tower development beyond what is associated with this earlier programmatic permit for LEPC take due to wind, solar, power line, and communication tower development.

The Plan Area is made up primarily of rural counties and the U.S. Census Bureau (2018) indicates relatively low or negative population growth for most counties within the Plan Area. As such, urban growth and development is not expected to be a substantial source of impacts to the LEPC or other human or natural resources in the Plan Area.

## **5.1 Biological Environment**

### **5.1.1 Vegetation**

Similar to the focus of the Affected Environment (see Section 4, above), the analysis of effects to vegetation focuses on the vegetation communities that support LEPC occupancy (i.e., herbaceous and hay/pasture land cover types), because both the Covered Activities and much of the conservation/mitigation activities would occur within these communities. While cultivated croplands may be converted to LEPC habitat as mitigation, this is not considered a natural vegetation community that would support the life history requirements of the LEPC, so our impact analysis regarding cultivated croplands is focused more on land use implications (see Section 5.2.1). Vegetation can be impacted at the individual, population, or community level. Substantial impacts to vegetation can occur when any of the following result:

- acreages of natural vegetation communities are reduced below the levels required to maintain plant species population viability at a local or regional level;
- loss or degradation of soil stability due to a reduction in native plant communities, which typically provide more robust root systems leading to increased soil regeneration capabilities (e.g., nutrients, fungi);
- increased soil compaction can reduce suitability of the habitat for some plant species;
- loss or degradation of habitat for a rare, threatened, or endangered animal species; or
- introduction of invasive species that results in replacement of native species.

#### **5.1.1.1 Alternatives 1 and 2**

Implementation of the HCP under Alternative 1 or CCAA under Alternative 2, including both the Covered Activities and the Conservation Program, would have an impact on vegetation within the Plan Area during pre-construction investigations; construction; post-construction restoration; repairs associated with oil and gas development; and during grassland improvement and management. Three vegetation communities account for more than 90% of the Plan Area, including LEPC habitat (slightly less than 33% of the land cover, including both herbaceous and hay/pasture), cultivated croplands (33%), and shrub/scrub (29%; see Section 4.2.1 of this EA and Table 2 of the HCP). The remaining vegetation communities each account for less than 1% of the Plan Area.

Under Alternatives 1 and 2, the Applicant would receive authorization to impact up to 500,000 acres of suitable LEPC habitat, which would be distributed throughout the 92,224,490-acre Plan Area over the 30-year permit term. Within the Plan Area, this would equate to 1.7% of the 30,178,085 acres of potentially suitable LEPC habitat, and approximately 45% of

the 1,105,417<sup>2</sup> acres of suitable LEPC habitat expected to be impacted by overall oil and gas development and associated grassland improvement and management activities conducted by a source other than a Service-approved entity during the permit term (see Table 4 in the HCP). Implementation of the Conservation Program would also affect approximately 1,000,000 acres of vegetation, either through preservation or restoration of LEPC habitat. Of this, at least 50,000 acres of existing LEPC habitat would be preserved and placed into LEPC strongholds or connectivity corridors, with the remaining acreage being a combination of preserving existing LEPC habitat and restoring suitable LEPC habitat through the conversion of cultivated croplands, removal of invasive woody species, removal of infrastructure, or other land management activities approved by the Service.

Impacts to vegetation communities anticipated from implementation of the HCP or CCAA would be both adverse and beneficial. Adverse impacts to vegetation would include both disturbance and removal, and degradation of vegetation communities could occur if plant growth is reduced as a result of soil compaction or if invasive plant communities establish and outcompete native communities. Beneficial impacts to vegetation would be primarily associated with implementation of the Conservation Program, which would result in the preservation of vegetation communities that are suitable for LEPC, restoration of degraded grasslands, conversion of cultivated croplands to LEPC habitat, and removal of woody invasive species.

Construction activities (Covered Activities under both Alternatives 1 and 2) would temporarily disturb or permanently convert vegetation communities in discrete areas associated with proposed infrastructure, including well pads, access roads, electrical distribution lines, communication towers (under 200 ft), pipelines, booster/compressor/pump stations, regulator facilities, processing and treatment facilities, electrical substations, and construction areas. The acreage of vegetation disturbed would vary for each project enrolled under the HCP or CCAA; however, the amount of vegetation impacted is expected to be substantially less than the 500,000 acres of LEPC habitat impacts authorized under the ITP/ESP because a large percentage of those acres would be associated with LEPC impact buffers (see Table 3 in Section 4.3 of the HCP), where vegetation clearing is not proposed.

Covered Activities would be conducted in accordance with federal, state, and local regulations and appropriate best management practices (BMPs) would be followed to avoid and/or minimize adverse impacts to vegetation communities. For example, enrolled projects regulated under Section 7(c) of the Natural Gas Act (facilities associated with interstate natural gas transmission) by the FERC, construction and restoration activities would be conducted in accordance with the FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan Wetland and Waterbody Construction and Mitigation Procedures* (2013a, 2013b). Appropriate BMPs could include, but are not limited to, minimizing the clearing of vegetation in temporary work areas and restricting construction vehicles to approved access roads and work spaces. Post-construction restoration, a Covered Activity under both Alternative 1 and Alternative 2, would reduce the impacts of

---

<sup>2</sup> The 1,105,417 acres of potentially impacted LEPC habitat from oil and gas development is derived from Table 4 of the HCP, but also includes the 50,000 acres of impacts to LEPC habitat expected to occur from grassland improvement and management activities associated with mitigation implemented through sources other than a Service-approved conservation bank or in-lieu fee program.

vegetation disturbance and removal through the revegetation of temporarily impacted areas. Through the application process, each enrolled project would describe project actions, estimated acreages of both biological and physical features within the project area, and the specific BMPs that would be implemented to avoid and minimize impacts. This would include quantifying the acres of vegetation that would be cleared or disturbed, and the proposed post-construction restoration plan. Each enrolled project would be monitored for ITP or ESP compliance through annual compliance monitoring reports submitted to the HCP or CCAA Administrator.

Soil compaction has the potential to impact existing vegetation and revegetation efforts. Impacts associated with soil compaction would be minimized in accordance with construction stormwater permit requirements (required under Section 402 of the Clean Water Act [CWA]); other federal, state, and local permit requirements; and with the successful implementation of BMPs, such as limiting construction vehicles to approved access roads and decompacting soils during restoration.

Invasive species may occur within the vegetation communities impacted by Covered Activities; however, the proportion of communities containing invasive species would vary for each enrolled project. Invasive species control measures would be implemented in accordance with state and local regulations. Further, implementation of the Conservation Program would result in the removal of woody invasive species on mitigation lands where LEPC habitat is restored (discussed in Section 3.1.3 of this EA and in Section 5.3.3 of the HCP).

Implementation of the Conservation Program would result in both temporary and permanent impacts to vegetation during efforts to improve or maintain LEPC habitat on mitigation parcels (e.g., controlled burning, erosion control, mechanical brush control, herbicide treatment, grazing management, range planting, forage harvest management, fence installation); however, both preservation and restoration of LEPC habitat are expected to result in beneficial impacts to vegetation communities. Impacts to higher quality vegetation communities considered suitable for LEPC (i.e., SGP CHAT categories 1 and 2) would be avoided through project siting to the extent feasible, and offsite restoration of degraded grasslands or conversion of cropland to restored grasslands would occur to mitigate the impacts to LEPC habitat. Under Alternatives 1 and 2, an estimated 1,000,000 acres of LEPC habitat would be preserved or restored to fully offset the impacts of the take,<sup>3</sup> as habitat would be mitigated at ratios ranging between 1.25:1 and 2.5:1 (see SGP CHAT categories and mitigation ratios in Section 5.3.3.1 of the HCP). Monitoring for effectiveness and compliance, required as part of ITP/ESP reporting under both Alternative 1 and Alternative 2 (see Section 3.1.4.2 of this EA), would ensure the Conservation Program is successful in offsetting adverse impacts.

Oil and gas development in the Plan Area would result in both short- and long-term impacts to vegetation. Impacts to vegetation would be minimized through adherence to permit conditions, implementation of industry-standard BMPs for each enrolled project, and would be expected to result in minor overall changes in the local plant community composition or health. Further, both

---

<sup>3</sup> The Applicant and Service assume that impacts to LEPC habitat would be equally distributed among SGP CHAT categories 1–4 and the associated mitigation ratios (see Section 5.3.3.1 and Table 6 in the HCP and Section 3.1.3 of this EA) throughout the Plan Area and over the 30-year permit term.

temporary impacts and permanent conversion of vegetation would be more than fully offset through the preservation or restoration of approximately 1,000,000 acres of LEPC habitat, which would include a reduction in woody invasive species, resulting in overall beneficial impacts to herbaceous and hay/pasture vegetation communities in the Plan Area. The degree of both short- and long-term vegetation impacts would be localized for each enrolled Project, and low in overall severity due to being fully offset by the habitat preservation and restoration measures described above. The long-term composition and function of vegetation communities would be expected to remain intact and effective.

Past and present actions have resulted in changes to the vegetation communities within the Plan Area and surrounding region. Most notable is the conversion of native communities to support agricultural crop production and livestock grazing, which collectively make up over 90% of the Plan Area (NRCS 2006). Other activities, including rural development, transportation, oil and gas pipelines, wind energy generation, and electrical transmission lines have, to a lesser degree, also caused changes in the vegetation communities. These past and present actions have resulted in temporary and permanent loss of native plant communities, fragmentation of contiguous communities, and the introduction and spread of invasive plant species.

Reasonably foreseeable actions are likely to cause similar changes to native plant communities within and surrounding the Plan Area. Up to 500,000 acres of vegetation within suitable LEPC habitat would be authorized to be impacted under the LEPC Renewables HCP or CCAA (LPC Conservation LLC 2021, Service 2021a), in addition to the 500,000 acres of vegetation within suitable habitat that would be authorized under this HCP, totaling 3.3% of suitable LEPC habitat within the Plan Area. Additionally, 1,000,000 acres of vegetation would be preserved or restored under the Conservation Program as part of the LEPC Renewables HCP or CCAA (LPC Conservation LLC 2021, Service 2021a). However, both preservation and restoration of LEPC habitat are expected to result in beneficial impacts to vegetation communities, and therefore would not be expected to add to cumulative adverse impacts to vegetation.

Oil and gas, wind, solar, power line, and communication tower development not covered under any HCP or CCAA would likely result in further loss, fragmentation, and degradation of vegetation communities. However, this development would be conducted in compliance with Section 402 of the CWA, which requires that construction activities disturbing at least one acre of land, and that discharge stormwater into surface waters obtain a National Pollutant Discharge Elimination System (NPDES) permit. As part of the NPDES permit, each project would be required to restore vegetation communities as part of its SWPPP and other industry-standard BMPs would likely be implemented, such as the avoidance of higher quality vegetation communities. Because of this, we assume most disturbance to vegetation communities from reasonably foreseeable future actions would likely occur within previously disturbed areas. Therefore, the issuance of an ITP for LEPC is not expected to result in significant cumulative effects to vegetation.

#### **5.1.1.2 Alternative 3 (No-Action)**

Under the No-Action Alternative, a similar level of oil and gas development as what is expected under Alternative 1 and Alternative 2 would likely occur over a 30-year period within the Plan

Area. As such, impacts to vegetation due to the Covered Activities would be similar to what is described above in Section 5.1.1.1 (with the exception of grassland improvement and maintenance associated with mitigation, which would not occur under the No-Action Alternative). It is expected that projects would implement BMPs during construction in order to avoid and/or minimize adverse impacts to vegetation communities where required by federal, state, or local regulations. Projects would likely take reasonable steps to minimize impacts to higher quality upland vegetation communities (e.g., forest, native grasslands) to the extent feasible during project planning; however, avoidance of these communities would be voluntary. Further, offsite restoration of degraded grasslands, conversion of cropland to restored grasslands, and removal of woody invasive species to offset impacts; monitoring; adaptive management; and reporting would not be required, which would result in less certainty over long-term effects to vegetation communities under the No-Action Alternative when compared to Alternative 1 and Alternative 2.

If the proposed rule to list the LEPC is adopted and the LEPC is afforded legal protection under the ESA in 2022, it is possible that individual HCPs would be developed for some oil and gas projects under the No-Action Alternative. It is likely that higher quality grassland habitats considered suitable for LEPC would be avoided and offsite mitigation would occur based on individual project requirements and coordination with appropriate agencies if the LEPC is listed. However, because projects would be authorized under individual HCPs rather than a programmatic HCP, it is expected that the mitigation ratio, monitoring requirements, and adaptive management strategy would be determined on a project-specific basis, making it more difficult to track overall impacts to vegetation communities. In addition, because some projects may not develop HCPs, there would be greater uncertainty in the amount and effectiveness of avoidance and mitigation across the Plan Area.

### **5.1.2 Wildlife**

Impacts to wildlife may occur when any of the following result:

- disturbance, injury, or mortality of individuals;
- habitat loss, degradation, or alteration;
- a change or reduction in resources used by wildlife in different life stages (e.g., alterations to habitat composition); or
- the creation of habitat edges and openings that favor a different mix of species, and may increase predation pressure and/or cause displacement or avoidance.

Substantial impacts to wildlife are those that affect a species' population (locally, regionally, or range-wide) or reduce its habitat quality or quantity to the point where population viability would be affected.

### 5.1.2.1 Alternatives 1 and 2

#### General Wildlife

Similar to the Affected Environment section above, the analysis of environmental impacts to wildlife focuses on those species that are considered common within the Plan Area, occur in similar habitats as the LEPC, and are not identified by federal or state agencies as at-risk species that require special management. Implementation of the Covered Activities described in the HCP under Alternative 1 or CCAA under Alternative 2 would impact wildlife habitat within the Plan Area during pre-construction investigations; construction; post-construction restoration; and repairs associated with oil and gas development; and grassland improvement and maintenance. As described in Section 4.2.1, LEPC habitat, cultivated croplands, and shrub/scrub habitat make up over 90% of the Plan Area, with other habitat types each accounting for less than 1% of the Plan Area.

As described in Section 5.1.1.1, under Alternatives 1 and 2, the Applicant would receive authorization to conduct Covered Activities that would affect up to 500,000 acres of suitable LEPC habitat. Implementation of the Conservation Program that would preserve or restore approximately 1,000,000 acres of LEPC habitat.

Implementation of the Covered Activities under either Alternative 1 or Alternative 2 has the potential to impact general wildlife species by removing, fragmenting, or degrading habitat; increasing disturbance associated with human activity; increasing risk of entrapment, physical injury, or mortality from vehicles or machinery. These impacts are discussed further below, with the understanding that the Covered Activities would be conducted for enrolled projects and as part of the Conservation Program in accordance with federal, state, and local regulations.

Implementation of the Covered Activities under both Alternative 1 and Alternative 2 would result in removal, degradation, and fragmentation of habitats that support general wildlife species. The acreage of wildlife habitat disturbed would vary for each project enrolled under the HCP or CCAA, which would be quantified and described in the CI application; however, as described in Section 5.1.1.1, the acreage is expected to be substantially less than the 500,000 acres of LEPC habitat impacts authorized under the ITP/ESP because a large percentage of those acres would be associated with LEPC impact buffers (see Table 3 in Section 4.3 of the HCP), where vegetation clearing and ground disturbance is not proposed. Furthermore, the impact buffers for LEPC do not apply to all general wildlife species, as these more common species are not expected to avoid anthropogenic structures on the landscape to the same level as LEPC. Fragmentation associated with the implementation of the Covered Activities would be minor, as the Plan Area is already largely fragmented by existing oil and gas projects (see Figures 2a and 2b). Implementation of the Covered Activities associated with the Conservation Program would affect approximately 1,000,000 acres of habitat within mitigation parcels, either through preservation or restoration and maintenance of suitable LEPC habitat. Activities within mitigation parcels would include the conversion of cultivated croplands, removal of invasive woody species, removal of infrastructure, or other land management activities approved by the Service.

Impacts to general wildlife habitat associated with the Covered Activities could displace individuals and have the potential to impact individual health and survivorship. The habitats that would be affected by the Covered Activities occur throughout the Plan Area and generally are already fragmented by existing features on the landscape (e.g., houses, roads, fences, power lines, drill rigs, natural gas processing and treatment facilities). Additionally, the HCP is designed to encourage CI-holders to avoid and/or greatly minimize impacts to larger intact LEPC habitats (i.e., SGP CHAT categories 1 and 2) because offsetting mitigation requirements would be substantially higher in those areas (see SGP CHAT categories and mitigation ratios in Section 5.3.3.1 of the HCP). Each enrolled project would be monitored for ITP compliance through annual compliance monitoring reports submitted to the HCP administrator. These efforts would help to minimize and offset habitat impacts for general wildlife species, and would ensure long-term success of habitat restoration associated with the Conservation Program.

Implementation of the Covered Activities would involve localized, short-term increases in human activity during construction at enrolled project sites and during grassland improvement and maintenance activities on mitigation parcels. Increased human activity, including human presence, noise, artificial light, and potential for wildfire, can cause disturbance to normal wildlife activities and behaviors. For example, such disturbances, particularly for nesting birds, may cause adult bird species to alter their nest/egg tending activities, which can lead to increased nest predation and reduced nest success (Stein and Ims 2016, Rodrigues et al. 2019). Displacement and disturbance impacts associated with increases in human activity during site preparation, construction, and repairs are characterized as short-term and low in severity.

Through implementation of the Covered Activities, wildlife could be injured or killed from collisions with vehicles and machinery and possibly entrapped during soil disturbing activities. Ground-dwelling wildlife such as reptiles, amphibians, and small mammals are particularly susceptible to mortality from vehicle collision and entrapment in trenches and other holes created during construction and grassland improvement activities. Injury and mortality impacts are characterized as short-term and limited to the duration of construction activities and intermittent repairs throughout the life of the projects, and to the duration of grassland improvement and management activities. Injury and mortality impacts are unlikely to be substantial enough to detrimentally impact general wildlife populations.

Wildlife impacts from implementation of the Covered Activities associated with enrolled projects, and the implementation of both post-construction restoration and offsite habitat mitigation, are expected to be both short- and long-term. Short-term impacts to wildlife populations may include injury or mortality of individuals, disturbance, and displacement resulting from construction activities, but project-specific BMPs would likely minimize the degree of these impacts. As stated above, higher quality grassland habitat considered suitable for LEPC (i.e., SGP CHAT categories 1 and 2) would be avoided through project siting, to the extent feasible, and fully mitigated through preservation, restoration of degraded grasslands, or conversion of cultivated croplands to restored grasslands as part of the Conservation Program proposed in the HCP. Long-term impacts to wildlife may include avoidance of suitable habitat in the vicinity of aboveground facilities; however, common wildlife species are not expected to avoid anthropogenic structures on the landscape to the same level as LEPC, and the landscape is already largely fragmented by existing oil and gas projects. Impacts would be distributed

throughout the Plan Area over the 30-year permit term, spreading out impacts to wildlife over time and space. Though some habitats would be permanently lost or fragmented due to oil and gas development, after completion of the proposed construction activities, normal wildlife activities and behaviors would be expected to resume. Therefore, the degree of both short- and long-term impacts to general wildlife would be characterized as low.

Past and present actions have impacted wildlife and their habitats within the Plan Area. Actions that have resulted in the loss, fragmentation, and alteration of wildlife habitats have likely reduced species richness and abundance, and shifted naturally occurring species community assemblages. Impacts to wildlife from past, present, and reasonably foreseeable future actions likely include injury and mortality to individuals, wildlife displacement and disturbance, and alteration and loss of suitable habitats. Similar to vegetation, up to 500,000 acres of wildlife habitat would be authorized to be impacted under the LEPC Renewables HCP or CCAA (LPC Conservation LLC 2021, Service 2021a), in addition to the 500,000 acres of wildlife habitat that would be authorized under this HCP, totaling 3.3% of suitable LEPC habitat within the Plan Area. Additionally, 1,000,000 acres of wildlife habitat would be preserved or restored under the Conservation Program as part of the LEPC Renewables HCP or CCAA (LPC Conservation LLC 2021, Service 2021a). However, both preservation and restoration of LEPC habitat are expected to result in beneficial impacts to wildlife species utilizing these habitats, and therefore would not be expected to add to cumulative adverse impacts to wildlife.

### Mortality

Past, present, and reasonably foreseeable future actions within the Plan Area have the potential to cause mortality to wildlife. Mortality from both the Covered Activities and future oil and gas development is largely limited to the construction period and intermittent repairs throughout the life of the projects. Wildlife could be injured or killed from collisions with vehicles and machinery and possibly entrapped during soil disturbing activities associated with construction. Mortality from these activities would be short-term in duration and unlikely to be substantial enough to detrimentally impact general wildlife populations. Therefore, the issuance of an ITP for LEPC is unlikely to significantly contribute to cumulative impacts to wildlife. However, reasonably foreseeable future actions within the Plan Area include the long-term operation of wind and solar projects, power lines, and communication towers, which have the potential to result in mortality of wildlife. The Service conducted a NEPA analysis that evaluated the cumulative impacts from mortality to birds and bats due to the long-term operation of wind, solar, power line, and communication tower projects within the Plan Area, and concluded that this long-term operation of renewable energy projects is not expected to result in significant cumulative effects to birds or bats (Service 2021b).

### Displacement and Disturbance

The potential for displacement and disturbance of wildlife species due to reasonably foreseeable future actions would be largely limited to the construction period for oil and gas, wind, solar, power line, and communication tower projects in the Plan Area. As described in Section 5.1.2 above, increased human presence, noise, and artificial light, can cause disturbance to normal wildlife activities and behaviors, particularly during the breeding, roosting, and denning seasons. Industry-standard BMPs would likely be implemented, including implementing disturbance

buffers for certain wildlife species during the more sensitive seasons mentioned above. After the construction period, normal wildlife activities and behaviors would be expected to resume. Therefore, cumulative displacement and disturbance of wildlife species would be short-term in duration, and likely spread out over time and space.

### Alteration and Loss of Suitable Habitats

Cumulative effects of land use conversion resulting in the loss, alteration, and fragmentation of wildlife habitat have largely taken place in the past, as agricultural land use has dominated the Plan Area for decades. Therefore, habitat loss and fragmentation from reasonably foreseeable future actions within the Plan Area is expected to be minor because wildlife habitat within the Plan Area has already been largely fragmented from past actions.

### Summary of Cumulative Impacts to General Wildlife

Reasonably foreseeable development within the Plan area is largely associated with energy and communication project development and operation, and it is anticipated that industry-standard BMPs would be implemented during both project construction and operation to reduce the potential for mortality and disturbance to wildlife and to reduce the loss and further fragmentation of wildlife habitat. As such, and because wildlife habitat within the Plan Area is already both disturbed and fragmented, cumulative effects to wildlife resulting from the issuance of an ITP for LEPC are expected to be minor and would not reduce naturally occurring populations to below levels needed for maintaining viability at local or regional levels.

### **Eagles**

In addition to the impacts to general wildlife described above, implementation of the proposed Covered Activities has the potential to impact bald and golden eagles. Increased human activity and noise levels associated with construction activities could disturb nearby nesting eagles. However, projects enrolled under the HCP must be in compliance with all federal, state, and local regulations. Specifically, as part of the application process, project proponents must provide a brief description of the planned approach to comply with the Bald and Golden Eagle Protection Act of 1940 (BGEPA; 16 USC 668-668d). As part of the BGEPA compliance approach, CI-holders would likely work in good faith with the Service to pursue a nest disturbance permit or eagle take permit for enrolled projects, if warranted. The permit process would identify what the potential impacts to eagles would be and, depending on species and size of the local area population, would determine if mitigation is necessary to offset the short-term disturbance and/or long-term production effects of removing/disturbing the nest. Therefore, the degree of both short- and long-term effects to eagles from implementation of the HCP or CCAA under Alternative 1 or Alternative 2 would be low.

Past, present, and reasonably foreseeable future actions have resulted and would continue to result in cumulative effects on bald and golden eagles within the Plan Area and surrounding region. These effects include injury or mortality of eagles as a result of collisions with tall anthropogenic structures (e.g., wind turbines, communication towers); power line electrocutions; displacement and disturbance due to development near nests; and potentially reducing the availability of preferred suitable habitats. Eagles may also experience mortality from poisoning

(e.g., lead, DDT, rodenticides), poaching/shooting, aircraft and vehicle collisions, and disease (Service 2016b).

Mortality from both the Covered Activities associated with oil and gas development and future renewable energy development is largely limited to the construction period and intermittent repairs throughout the life of the projects. Eagles are unlikely to be killed during soil disturbing activities, with the possible exception of vehicle collisions with eagles that are on the ground or very low flying. However, mortality from these activities would not be expected to be frequent enough to detrimentally impact eagle populations. Reasonably foreseeable future actions within the Plan Area include the long-term operation of wind and solar projects, power lines, and communication towers, all of which have the potential to injure or kill eagles. Both bald and golden eagles have been found as fatalities as wind facilities; however, golden eagles appear to be more susceptible to turbine blade collision than bald eagles (Pagel et al. 2013, Bay et al. 2016, Katzner et al. 2016, MidAmerican Energy Company 2019). Eagle mortality from colliding with solar panels and communication towers is unlikely; however, solar facilities have the potential to locally displace eagles from foraging habitats, particularly for golden eagles (Manville 2016). Power line electrocution is one of the primary causes of mortality for bald and golden eagles throughout their range and accounts for at least 25% of known eagle fatalities (Service 2016b).

Reasonably foreseeable oil and gas, wind, solar, power line, communication tower projects would likely work with the Service to implement BMPs and pursue and obtain eagle take permits or nest disturbance permits to comply with BGEPA, if warranted. Many of these projects would likely be enrolled in the HCP or the LEPC Renewables HCP (LPC Conservation LLC 2021), if authorized, both of which require project proponents to provide documentation of a plan for BGEPA compliance. The Service's 2016 cumulative effects analysis and recent population estimates concluded that bald eagle populations have continued to increase despite cumulative factors, while golden eagle populations may be susceptible to decline due to cumulative mortality (Service 2016b, Service 2020). While the Service acknowledges that cumulative effects to golden eagles remain a concern, federal consultation under BGEPA, although voluntary, would provide the Service with an opportunity to ensure the cumulative amount of both bald and golden eagle take does not jeopardize the continued existence of either species. As such, the issuance of an ITP for LEPC is not expected to result in significant cumulative effects to bald or golden eagle populations.

### **5.1.2.2 Alternative 3 (No-Action)**

#### **General Wildlife**

Under the No-Action Alternative, a similar level of oil and gas development as what is expected under Alternative 1 and Alternative 2 would likely occur over a 30-year period within the Plan Area. As such, impacts to wildlife due to the Covered Activities would be similar as what is described above in Section 5.1.2.1 (with the exception of grassland improvement and maintenance, which would not occur under the No-Action Alternative). It is expected that projects would implement BMPs during construction in order to avoid and/or minimize adverse impacts to wildlife where required by federal, state, or local regulations. Projects would likely take reasonable steps to minimize impacts to higher quality habitat (e.g., forest, native grasslands) to the extent feasible during project planning. As described in additional detail in

Section 5.1.1.2, projects would not be required to offset impacts, and the absence of monitoring, adaptive management, and reporting under the No-Action Alternative would result in less certainty over long-term effects to wildlife compared to Alternative 1 and Alternative 2.

If the proposed rule to list the LEPC is adopted and the LEPC is effectively protected under the ESA in 2022, it is possible that individual HCPs would be developed for some oil and gas projects under the No-Action Alternative. However, similar to the discussion in Section 5.1.1.2, mitigation, monitoring and adaptive management would be determined on a project-specific basis, making it more difficult to track overall impacts. In addition, because some projects may not develop HCPs, there would be greater uncertainty in the amount and effectiveness of avoidance and mitigation across the Plan Area.

### **Eagles**

Short- and long-term effects to eagles under the No-Action Alternative are expected to be similar to what is described above for Alternative 1 and Alternative 2. Project proponents may work in good faith with the Service to pursue and obtain a nest disturbance permit if construction activities associated with an individual project would be likely to disturb or displace eagles or an eagle take permit, regardless of whether an ITP or ESP for LEPC is granted. However, unlike Alternatives 1 and 2, there would be no requirement to develop a plan for BGEPA compliance, which would likely result in fewer projects voluntarily pursuing eagle permits. Therefore, both short- and long-term effects to eagles are expected to be minor, albeit more uncertain under the No-Action Alternative.

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

In accordance with Section 7 of the ESA of 1973 (16 USC 1531–1599), actions that have a federal nexus such as involvement of federal land, federal funding, or a federal action (e.g., the decision on whether to issue an ITP) necessitate conference with the Service if the federal action is likely to jeopardize the proposed species or adversely modify proposed critical habitat, and is designed to help federal agencies identify and resolve potential conflicts between an action and species conservation early in the planning process. Because the Service is the lead agency in the review of the permit application for the Project, an Intra-Service Section 7 conference is being completed; the Service’s Intra-Service Section 7 conference opinion will document if and how issuance of the permit (and associated implementation of the HCP or CCAA and permit conditions) and/or denial of the permit would affect the LEPC and/or federally listed species.

As described above, projects seeking to enroll in the HCP or CCAA would be required to provide documentation of ESA compliance for species not covered under the programmatic permit. Similarly, enrolled projects would be required to adhere to state regulations relating to state-listed endangered and threatened species (see Attachment B). Therefore, only impacts to the LEPC are discussed further in this section.

Impacts to LEPC may occur when any of the following result:

- disturbance, injury, or mortality of LEPC individuals;

- loss, degradation, or alteration of LEPC habitats or resources used to fulfill different life history needs (i.e., leks, nesting habitat, brood habitat, autumn/winter habitat) resulting in reduced survivorship or reproductive success; or
- the creation of features on the landscape that may cause LEPC displacement or avoidance.

Similar to general wildlife, substantial impacts to LEPC are those that substantially affect the population (locally, regionally, or range-wide) or reduce LEPC habitat quality or quantity.

### **5.1.3.1 Alternatives 1 and 2**

Implementation of the Covered Activities under Alternative 1 or Alternative 2 has the potential to impact the LEPC throughout the species' annual cycle (i.e., wintering, lekking/breeding season, nesting, and early and late brood rearing). While impacts such as disturbance, injury, or mortality of LEPC are possible due to implementation of the Covered Activities, the primary reason for LEPC population declines is the loss of suitable habitat and the subsequent displacement of individuals (Service 2014a). Consequently, habitat loss and displacement are the primary impacts that would result from oil and gas development under both Alternative 1 and Alternative 2 and the implementation of the HCP or CCAA. As such, acres of suitable LEPC habitat are used as a surrogate for measuring impacts and take of LEPC individuals.

### **Impact Assessment and Take Prediction**

As described in Section 4.1.1, potentially suitable LEPC habitat within the Plan Area was quantified using land cover classes, including herbaceous and hay/pasture, which account for approximately 32% and less than 1%, respectively, of the land cover types within the Plan Area (a total of 30,178,084 acres). For this analysis, and as described in additional detail in Section 4.1 of the HCP, LEPC take that could result from oil and gas projects and from grassland improvement and maintenance activities covered under the HCP were estimated using acres of potentially suitable LEPC habitat as a surrogate for take of LEPC individuals.

Estimated LEPC take includes both acres where ground disturbance and construction activities associated with project development would occur; adjacent spaces where LEPC occurrence is altered in response to oil and gas project components is expected; and where grassland improvement and maintenance activities would occur (see Section 4.3 and Table 4 in the HCP). This estimate identified a total of 1,105,417 acres of potentially impacted land within the Plan Area that may be suitable for LEPC (see Table 4 in the HCP); of this, the Applicant is requesting authorization for take of up to 500,000 acres of suitable LEPC habitat.<sup>4</sup>

Projects enrolled in the HCP would quantify actual impacts to LEPC habitat using a six-step process, which is described in detail in Section 4.4 of the HCP. This process includes both

---

<sup>4</sup> Note that the Applicant is requesting authorization to take up to 500,000 acres of suitable LEPC habitat, which is approximately 45% of the 1,105,417 acres expected to be impacted by overall oil and gas development, as well as grassland improvement and maintenance activities during the permit term. Cumulative effects associated with development not included in the Applicant's request are discussed in Section 5.4.3, below.

desktop and field-based review, and would culminate in an LEPC take calculation for each project. CI applicants would prepare and submit the assessment to the HCP Administrator, and ultimately the Service, for review as part of the CI application process.

### **Conservation Program**

Under the Conservation Program (summarized in Section 3.1 of this EA and described in detail in Section 5 of the HCP), enrolled projects would implement measures to avoid and minimize impacts to LEPC habitat. For select projects, it is possible that impacts could be fully avoided by strategic siting so that both the project facilities and the associated buffers occur within areas that are not considered suitable LEPC habitat.<sup>5</sup> It is expected that most enrolled projects would not be able to fully avoid LEPC habitat; in these instances, impacts to LEPC would be minimized by siting projects and associated impact boundaries in lower-quality habitat (determined during the six-step habitat impact assessment described above), areas with existing impacts or features (e.g., buildings, roads, drill rigs, or other structures) on the landscape, and burying linear facilities. The proposed mitigation ratios (discussed further in Section 5.1.1.1 and in Section 5.3.3 of the HCP) are designed to incentivize the minimization of impacts to suitable habitat. Projects impacting smaller amounts of LEPC habitat and/or lower habitat quality would require fewer mitigation credits to offset those impacts, and thus pose less of a financial burden to the developer.

Enrolled projects would also implement measures to reduce impacts to LEPC during the breeding season (March 1 – July 15). During the breeding season, noise and blasting, traffic volume and speed, and access points would be minimized to reduce LEPC disturbance. In addition, enrolled projects would avoid off-road travel, where feasible,<sup>6</sup> within three miles of leks that have been recorded as active within the previous five years, as described in Section 3.1.2 of this EA and Section 5.3 of the HCP.

Impacts to suitable LEPC habitat that remain after avoidance and minimization measures have been implemented would be offset for each enrolled project through habitat mitigation. As described in Section 5.3.3 of the HCP, mitigation fees would cover the conservation and management of mitigation lands in perpetuity, fully offsetting the impacts of enrolled projects on LEPC habitat.

Grassland improvement and management activities that occur in potential LEPC habitat on mitigation parcels could also result in take of LEPC. As described in Section 3.1.3, mitigation would be secured through a Service-approved mitigation bank, in-lieu fee program, or permittee-

---

<sup>5</sup> Typically, a project that entirely avoids impacts to LEPC habitat would not be expected to enroll in the HCP because the project would not require take coverage. However, in certain instances, a project may choose to enroll in the HCP in order to provide regulatory certainty that coverage for take would not be required at a later date if adjacent lands (that are within the buffers LEPC are expected to avoid) are modified such that they become suitable LEPC habitat at a later date.

<sup>6</sup> Although enrolled projects would commit to minimizing noise and blasting, traffic volume and speed, and access points during the breeding season, where feasible (Section 5.3.2.2 of the HCP), whether each project is able to completely avoid these potential sources of disturbance during the breeding season would not necessarily be provided in the application package.

responsible mitigation project. Take of LEPC associated with grassland improvement and management activities on mitigation secured through a Service-approved bank or in-lieu fee program would be authorized under the existing banking or in-lieu fee program agreement between the mitigation provider and the Service. The Applicant anticipates approximately 50,000 acres of take would be associated with permittee-responsible mitigation projects (i.e., from a source other than a Service-approved mitigation bank or in-lieu fee program; see Table 4 of the HCP), which would be subject to Service approval. Take associated with permittee-approved mitigation projects would be covered under the HCP, and subject to approval by the Service (see Section 9.2 of the HCP).

Once initial improvement activities have occurred, maintenance activities within mitigation parcels would have minimal impacts to LEPC. Take of LEPC resulting from the temporary loss of habitat or impacts to individual LEPC occupying mitigation parcels during maintenance activities are relatively minor on a landscape level and would be more than offset by the net benefit to the species provided by these activities. As such, additional mitigation to offset take of LEPC that could occur on mitigation parcels during management activities would not be required.

Through the payment of mitigation fees, effectiveness and compliance monitoring, and the adaptive management approach described in Sections 3.1.3–3.1.5, above, implementation of the HCP or CCAA under Alternative 1 and Alternative 2, respectively, would ensure that the take of LEPC habitat is fully mitigated throughout the permit term.

### **Reasonably Foreseeable Future Actions**

The LEPC is the only species for which take would be permitted under the ITP or ESP. Cumulative effects to any other species that may occur within the impact areas of enrolled projects would be documented and evaluated for each individual project to ensure ESA compliance, and the LEPC is the only species for which cumulative effects are analyzed further in this EA. Past and present actions have impacted LEPC individuals and habitat within and surrounding the Plan Area. Between 2015 and 2017, it was estimated that at least 258,000 acres of the LEPC range was lost or disturbed due to agricultural conversion and energy development (Evans and Li 2017). Reasonably foreseeable actions are estimated to effect an additional 1,707,916 acres of suitable LEPC habitat within the Plan Area due to renewable energy development, 500,000 acres of which would be fully offset by the implementation of the Conservation Program outlined in the LEPC Renewables HCP or CCAA (LPC Conservation LLC 2021, Service 2021a) and 605,417 acres due to oil and gas development not covered under the HCP or CCAA. In addition to habitat loss and disturbance from agriculture and energy generation, additional threats such as climate change, disease, hunting, nest parasitism by and competition with ring-necked pheasants, hybridization with greater prairie-chicken, and reduced genetic diversity and loss of fecundity due to small population sizes, all have the potential to further contribute to cumulative effects to the LEPC.

When combined with past, present, and reasonably foreseeable actions, although implementation of the Covered Activities would contribute to adverse effects on the LEPC within the Plan Area, they would be fully offset by the proposed Conservation Program. If the proposed rule to list the LEPC is adopted and the LEPC is effectively protected under the ESA in 2022, potential impacts

from future federal projects have the potential to be avoided, minimized, and mitigated under ESA Section 7, and private projects under ESA Section 10. As a result of the ESA consultation process, the Service ensures the cumulative amount of take of the LEPC allocated to permittees does not jeopardize the continued existence of the species. Conversely, the Service may determine that listing the LEPC is not warranted, or the species could be listed as threatened with a 4(d) rule, allowing for incidental take resulting from otherwise lawful activities. In this case, the Service's determination would be based on evidence supporting range-wide population stability for the LEPC. Therefore, cumulative impacts from past, present, and reasonably foreseeable future actions would not be significant.

### **Summary of Impacts to LEPC**

Implementation of the Covered Activities would result in both short-term and long-term impacts to LEPC within the proposed Plan Area. The Covered Activities associated with each of the enrolled projects would result in relatively localized impacts that would be minimized by post-construction restoration. The overall loss of 500,000 acres of LEPC habitat would be moderate in degree, but would be fully offset by implementation of the Conservation Program. Short-term impacts to LEPC may include injury or mortality of individuals, disturbance, and displacement resulting from construction activities and grassland improvement and maintenance activities, but the avoidance and minimization measures described above and in Section 3.1.2 would minimize the degree of these short-term impacts. Though some suitable LEPC habitat would be permanently lost or fragmented due to oil and gas development, the habitat mitigation that would occur under the proposed HCP or CCAA would fully offset these impacts. Therefore, the degree of both short- and long-term effects to LEPC is characterized as low.

#### **5.1.3.2 Alternative 3 (No-Action)**

Under the No-Action Alternative, the Service assumes a similar level of oil and gas development as what is expected under Alternative 1 and Alternative 2 would likely occur over a 30-year period within the Plan Area. While the LEPC remains proposed for listing, individual projects would incorporate varying voluntary amounts of LEPC risk assessment, avoidance, and minimization measures in the design, construction, and operation of their project. Mitigation for impacts to LEPC habitat would not be required under the No-Action Alternative, nor would there be requirements for effectiveness and compliance monitoring to ensure minimization of impacts to LEPC that exist under Alternatives 1 and 2. Further, there would be no impact cap of 500,000 acres of LEPC habitat. Given the absence of mitigation requirements or an impact cap, it is anticipated that impacts to LEPC habitat due to oil and gas development under the No-Action Alternative would likely meet or potentially exceed the predicted levels of 1,055,417 acres<sup>7</sup> of suitable LEPC habitat over 30 years. This would equate to slightly over 3% of the 30,178,085 acres of land cover that is potentially suitable for LEPC within the Plan Area.

---

<sup>7</sup> The 1,055,417 acres of potentially impacted LEPC habitat from oil and gas development is taken from Table 4 of the HCP, and does not include the 50,000 acres of permittee-responsible mitigation that would not occur under the No-Action Alternative.

If the proposed rule to list the LEPC is adopted and the LEPC is afforded legal protection under the ESA in 2022, it is possible that projects regulated by the FERC would obtain coverage for incidental take of LEPC under Section 7 of the ESA, and that individual HCPs would be developed for some oil and gas projects under the No-Action Alternative. However, similar to the discussion in Section 5.1.1.2, mitigation, monitoring and adaptive management would be determined on a project-specific basis, making it more difficult to track overall impacts. In addition, because some projects may not see coverage for incidental take, both short- and long-term adverse effects to LEPC are expected to be higher under the No-Action Alternative than under Alternative 1 or Alternative 2.

## **5.2 Physical Environment**

### **5.2.1 Land Use**

Land use drives the regional economy and utilization of resources, and as such determines the regional environmental quality, ecosystem services provided (e.g., regeneration of soil nutrients, provision of pollinator habitat), and socioeconomic systems. Land use can be impacted at the local or regional level and substantial impacts to land use can occur when any of the following result:

- rapid, unsustainable development or urbanization;
- substantial increase or decrease in the regeneration of soil nutrients;
- substantial increase in available pollinator habitat to support the pollination of both crops and natural vegetation; or
- substantial change in socioeconomic stability (e.g., jobs, food production, housing).

#### **5.2.1.1 Alternatives 1 and 2**

The Plan Area includes portions of Colorado, Kansas, New Mexico, Oklahoma, and Texas. These five states collectively produce approximately 70% of crude oil and 45% of natural gas in the nation (USEIA 2020d). As existing oil and gas projects are already very prevalent in the Plan Area and have been since the early 1900s, the anticipated buildout for new oil and gas projects would not be expected to drastically change existing land use. However, the implementation of the Covered Activities and associated oil and gas development, as well as grassland improvement and maintenance activities would still likely have a minor impact on land use within the Plan Area. As discussed in Section 4.2.1, above, the dominant land cover types in the Plan Area are cultivated croplands (33%), herbaceous (32%), and shrub/scrub (29%), with over 90% of the land being privately owned and used for rangeland or agriculture (NRCS 2006). Anticipated land use impacts resulting from the Covered Activities would likely occur primarily within these dominant land use types. With the exception of developed, open space (e.g., roads), which occupies 2.4% of the Plan Area, other land use types each occupy less than 1% of the Plan Area.

Oil and gas projects can cover large expanses of land; however, significant portions of oil and gas projects (e.g., pipelines) can be buried underground, resulting in a minimization of land use

impacts. With the exception of areas permanently converted (e.g., aboveground facilities and access roads), normal land use activities (e.g., cultivated croplands and pasture) typically resume after project construction. The Conservation Program proposed by the Applicant would provide incentives for minimizing impacts to LEPC habitat (see Section 5.3 of the HCP); therefore, we anticipate that land use effects would be primarily within cultivated croplands and shrub/scrub cover types. As described in Table 4 of the HCP, the collective footprint of oil and gas development within the Plan Area during the 30-year permit term is approximately 4,051,201 acres, of which 2,995,784 acres<sup>8</sup> would likely occur in cultivated croplands and shrub/scrub cover types. This would equate to a change in land use just over 3% of the Plan Area. However, the acreage of land use actually impacted is expected to be substantially less than 2,995,784 because a large percentage of those acres are associated with LEPC impact buffers (see Table 3 in Section 4.3 of the HCP), where land use likely will not change.

While the development of oil and gas projects would alter the existing land use in some areas for the operational life of the projects, these land use impacts would represent a small portion of the footprint associated with enrolled projects, and would be located throughout the Plan Area. Further, private landowners would be compensated for participating in oil and gas development; therefore, no adverse socioeconomic impacts would be anticipated. Oil and gas development under Alternatives 1 and 2 would be conducted in accordance with all federal, state, and local regulations and is not anticipated to result in substantial unsustainable development or substantial changes to soil nutrient regeneration, available pollinator habitat, or socioeconomic stability. Overall, both short- and long-term effects to land use resulting from the Covered Activities are expected to be minor.

Habitat mitigation that would occur as part of the Conservation Program under the HCP or CCAA would result in the conversion of cultivated croplands, herbaceous, and shrub/scrub lands to restored LEPC habitat, with the goal of creating LEPC strongholds and to ensuring connectivity between strongholds. As summarized in Section 3.1.3 of this EA and described in detail in Section 5.3.3 of the HCP, a total of 1,000,000 acres of habitat mitigation would occur through implementation of the HCP. The initial 50,000 acres would preserve currently suitable LEPC stronghold habitat. After the initial 50,000 acres has been secured, mitigation is assumed to be balanced equally between preservation and restoration activities. This would result in the preservation of 525,000 acres of existing LEPC habitat and the restoration of 475,000 acres of LEPC habitat that is currently cultivated croplands, herbaceous lands, or shrub/scrub lands.

We assume that mitigation parcels would be within areas representative of existing land use in the Plan Area, thus 33% of the 475,000 acres (156,750 acres) would be composed of cultivated croplands. This would represent conversion of 0.5% of the existing cultivated croplands in the Plan Area over the 30-year permit term, which would have a negligible impact on food supply. The remaining parcels of land where restoration of LEPC habitat would occur would include 152,000 acres of herbaceous land and 137,750 acres of shrub/scrub land. Herbaceous lands selected for restoration would not change land use type, and shrub/scrub habitat would either maintain its current land use classification or be converted to herbaceous land, depending on the

---

<sup>8</sup> The 2,995,784 is the remaining collective footprint estimated in Table 4 of the HCP after subtracting the 1,055,417 acres that would be anticipated to be impacted within potentially suitable LEPC habitats.

restoration activities that would be implemented. Within these land use types, the suitability of the habitat for LEPC would be improved upon through the removal of woody invasive species, removal of old infrastructure (e.g., barns and unused roads), or additional restoration activities approved by the Service.

From an ecological perspective, converting the vegetation from cultivated croplands and shrub/scrub lands to herbaceous lands that provide strongholds or connectivity corridors for LEPC would result in restoration of native plant communities with increased species diversity. This form of land use change could increase the regeneration of soil nutrients and would provide habitat for many species that pollinate both cultivated croplands and natural vegetation. Overall, effects to land use resulting from implementation of the Conservation Program would be minor.

Implementation of the Covered Activities and the Conservation Program would result in both short- and long-term impacts to land use within the proposed Plan Area. These impacts would be characterized as minor and would not result in substantial unsustainable development or substantial changes to soil nutrient regeneration, available pollinator habitat, or socioeconomic stability. Though some cultivated croplands and shrub/scrub habitat would be permanently converted to herbaceous lands from the habitat mitigation that would occur under the proposed HCP or CCAA, the amount of converted land would be a negligible portion of the overall coverage of these land cover types in the Plan Area. Additionally, land use change would be distributed throughout the Plan Area over the 30-year permit term, spreading out impacts to land use over time and space. Therefore, the degree of both short- and long-term effects to land use is characterized as low.

Past and present actions have resulted in changes to land use within the Plan Area and surrounding region. Most notably is the conversion of natural communities (e.g., herbaceous, forested, and wetland land cover types) to support agricultural crop production and livestock grazing. Other activities, including rural development, transportation, oil and gas pipelines, wind energy generation, and electrical transmission lines have, to a lesser degree, also caused changes to land use. These past and present actions have resulted in temporary and permanent loss of natural land cover types. Reasonably foreseeable actions are likely to cause similar changes to land use in and surrounding the Plan Area.

Approximately 1,055,417 acres of land is expected to be impacted by oil and gas development, and 1,707,916 acres of land is expected to be impacted by wind, solar, power line, and communication tower development (LPC Conservation LLC 2021, Service 2021a) within the Plan Area. However, impacts to land use would generally be short-term in duration (i.e., limited to the construction period) as most pre-existing land uses would likely resume following construction activities. Oil and gas development, along with wind, solar, power line, and communication tower projects not covered under any HCP or CCAA would result in further changes to land use, primarily due to solar projects as the other four forms of development allow for dual land use after construction while solar projects are limited in the potential land uses that could occur beneath the panels. Within the Plan Area, solar development would result in a temporary, but long-term change of less than 0.1% of any of the land cover types within the Plan

Area.<sup>9</sup> Additionally, this development would be conducted in compliance with federal, state, and local regulations and industry-standard BMPs would likely be implemented. As such, and because most land use changes within the Plan Area took place in the past, significant cumulative effects to land use as a result of issuing an ITP for LEPC are not expected.

### **5.2.1.2 Alternative 3 (No-Action)**

Under the No-Action Alternative, a similar level of oil and gas development would likely occur over a 30-year period within the Plan Area. As such, impacts to land use would be minor and would be similar to those described for Alternatives 1 and 2 as projects would be developed in accordance with federal, state, and local regulations. A small amount of permanent land use conversion would occur due to oil and gas development (e.g., aboveground facilities and access roads); however, after completion of the proposed construction activities, previous land use activities would be expected to resume. However, because there would be no incentives to avoid or minimize impacts within herbaceous or hay/pasture (LEPC habitat), long-term impacts to these land cover types would be expected to be somewhat higher than they would be under Alternative 1 or Alternative 2. In addition, the No-Action Alternative would not require habitat mitigation; therefore, no permanent conversion of either cultivated croplands or shrub/scrub land types would occur.

## **5.2.2 Noise**

Implementation of the Covered Activities and associated oil and gas development would have an impact on noise levels within the Plan Area. Potential impacts to wildlife and listed species associated with increased noise levels are discussed above (see Sections 5.1.2 and 5.1.3, respectively). Human response to noise is highly subjective and varies from person to person. However, increases in ambient noise levels can cause adverse impacts when any of the following result:

- interference with human speech and sleep;
- adverse health effects (e.g., hearing loss, psychological effects); or
- disproportionate impacts to noise sensitive areas (e.g., schools, residences, hospitals).

### **5.2.2.1 Alternatives 1 and 2**

Increased noise levels associated with the Covered Activities and Conservation Program would occur during construction, maintenance, and decommissioning of enrolled projects, and during restoration activities. These increased noise levels would be short-term and would have a varying level of impact on the landscape based on topography, land use, and human population. Increases in ambient noise levels would primarily be limited to the immediate area surrounding activities

---

<sup>9</sup> Calculation is based on the assumption that 3,651 MW of solar development could occur within the Plan Area during the permit term (LPC Conservation LLC 2021), which would convert up to 36,510 acres of land (SEIA 2020) within the Plan Area. This represents less than 0.1% of all land cover types within the Plan Area, regardless of whether or not the solar development is covered under the Renewables HCP or CCAA (Service 2021a).

associated with enrolled projects or restoration activities, which would occur primarily within LEPC habitat, cultivated croplands, and shrub/scrub. While increased noise levels from the Covered Activities would be above the ambient noise levels associated with a rural setting, because population density is lower in residential or rural areas (see Section 4.2.2), it is expected there would be few noise sensitive areas within the impacted areas.

Under Alternatives 1 and 2, the Applicant would receive authorization to impact up to 500,000 acres of suitable LEPC habitat and to preserve or restore 1,000,000 acres as habitat mitigation, which would be distributed throughout the 92,224,490 acre Plan Area over the 30-year permit term. The noise-impacted area would vary for each project enrolled under the HCP or CCAA; however, the area impacted by increased noise levels associated with the Covered Activities is expected to be substantially less than the 500,000 acres of LEPC habitat impacts authorized under the ITP/ESP because a large percentage of those acres would be associated with LEPC impact buffers (see Table 3 in Section 4.3 of the HCP), where ground disturbance and other construction activities are not proposed. Nevertheless, at most, 1.6% of the Plan Area would be subjected to temporary increased noise levels at some point during the 30-year permit term (see Table 4 in Section 4.3 of the HCP).

Federal, state, and local regulations would be expected to take noise impacts into account for each enrolled project. In 1974, the USEPA published its *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. This document provides information for state and local governments to use in developing their own ambient noise standards. The USEPA determined that a day-night sound level of 55 decibels on the A-weighted scale (similar to the sound level produced by a household refrigerator protects the public from indoor and outdoor activity noise interference. As a result of this guidance, many agencies require that noise levels be at or below this threshold at noise sensitive areas (e.g., residences, schools, hospitals, places of worship) that are in the vicinity of project activities. Specific regulations for enrolled projects are not known at this time; however, federal, state, and local regulations often require noise impact analysis. Covered Activities would be conducted in accordance with federal, state, and local regulations and appropriate BMPs would be developed and followed to avoid and/or minimize adverse impacts from increased noise levels.

Long-term impacts to noise could occur in association with general operation of enrolled projects; however, with the exception of maintenance and decommissioning, which would be expected to result in temporary increases in noise levels that would be similar to construction activities because similar equipment would be required, the operation of enrolled projects is not a Covered Activity. As such, long-term impacts due to noise are discussed in the context of cumulative effects in Section 5.4.5, below.

Impacts from increased noise due to Covered Activities would be temporary, localized, and spread throughout the Plan Area over time and space. As such, the implementation of the Covered Activities and Conservation Program under Alternatives 1 and 2 would not be expected to result in adverse impacts to the human environment in relation to noise. The degree of noise impacts would be localized for each enrolled Project, and low in overall severity due to the short-

term duration, adherence to federal, state, and local noise requirements, and low number of noise sensitive areas in the primarily rural areas where enrolled projects would be located.

Past, present, and reasonably foreseeable future actions have resulted, and will result, in short-term and long-term noise impacts in the Plan Area. Implementation of the Covered Activities and the related construction activities, associated traffic, and operational activities would contribute to cumulative noise impacts. Of the reasonably foreseeable future actions, wind development and compressor stations associated with oil and gas facilities would be the greatest contributor to long-term cumulative noise impacts within the Plan Area. At most, 3.2% of the Plan Area would be subject to temporary increased noise levels at some point during the 30-year permit term from reasonably foreseeable oil and gas, wind, solar, power line, and communication tower development authorized under an ITP for LEPC (LPC Conservation LLC 2021, Service 2021a). Additionally, energy development would be subject to applicable federal, state, and local permit siting requirements. As discussed above (see Section 5.2.2.), many agencies require that noise levels be at or below this threshold at noise sensitive areas (e.g., residences, schools, hospitals, places of worship) that are in the vicinity of project activities. Developers would be expected to analyze noise impacts associated with construction and operation, and implement appropriate BMPs to minimize noise impacts. Furthermore, noise impacts would be localized and spread throughout the Plan Area over time and space. As such, cumulative noise impacts from past, present, and reasonably foreseeable future actions would not be significant.

#### **5.2.2.2 Alternative 3 (No-Action)**

Under the No-Action Alternative, a similar level of oil and gas development would likely occur over a 30-year period within the Plan Area. As such, impacts to noise levels would be similar to those described for Alternatives 1 and 2 as projects would be developed in accordance with federal, state, and local regulations. However, the No-Action Alternative would not require habitat mitigation; therefore, noise associated with restoration activities on mitigation lands would not occur. Under the No-Action Alternative, the degree of noise impacts would be localized for each enrolled Project, and low in overall severity for the same reasons described above for Alternatives 1 and 2.

#### **5.2.3 Visual Resources**

Implementation of the Covered Activities and associated oil and gas development would have an impact on visual resources within the Plan Area. Potential impacts to wildlife and listed species associated with visual impacts are discussed above (see Sections 5.1.2 and 5.1.3, respectively).

As they relate to the human environment, impacts to visual resources are highly subjective and can vary from person to person. However, impacts to visual resources can occur when any of the following result:

- obstruction of or substantial damage to a unique or scenic vista or resource;
- degradation of the existing visual character or quality of an area; or

- creation of a new source of light creating glare that could affect day or nighttime views in an area.

### 5.2.3.1 Alternatives 1 and 2

Impacts to visual resources associated with the Covered Activities and Conservation Program would occur during construction, maintenance, and decommissioning of enrolled projects, and during restoration activities. Visual impacts would be associated with construction activities associated with pipeline installation as well as aboveground structures (e.g., drill rigs, compressor stations, meter stations).

Under Alternatives 1 and 2, the Applicant would receive authorization to impact up to 500,000 acres of suitable LEPC habitat and to preserve or restore 1,000,000 acres as habitat mitigation, which would be distributed throughout the 92,224,490 acre Plan Area over the 30-year permit term. The impacted viewshed would vary for each project enrolled under the HCP or CCAA based on the type of aboveground structures being constructed, local topography, vegetation present, and surrounding facilities. Because over 90% of the Plan Area is composed of cultivated croplands, herbaceous, and shrub/scrub lands (each of which is associated with a relatively open viewshed) in a rural setting, the taller features (e.g., drill rigs, communication towers [under 200 ft in height], and other above ground facilities) would be a distinctive change to the viewshed in some areas, resulting in moderate adverse impacts to visual resources. Although the construction, maintenance, and decommissioning of project facilities are Covered Activities, which would result in long-term impacts to visual resources, general operation of enrolled projects is not a Covered Activity. As such, long-term impacts to visual resources associated with operation (e.g., maintained vegetation along pipeline centerlines, mainline valves, and other aboveground facilities) are discussed in the context of cumulative effects in Section 5.4.6, below.

Potential impacts to visual resources associated with the enrolled projects would vary based on the proximity of the project facilities to visually sensitive areas (e.g., scenic rivers, parks, trails) and residential areas, as well as local topography and vegetative screening. Visually sensitive areas, may be designated at the federal, state, or local level, and these regulations would be expected to take impacts to visual resources into account for each enrolled project. As with noise, oil and gas development is regulated by several federal and state agencies and includes review of potential environmental impacts associated with construction and operation, and is sometimes further regulated at the county level. Covered Activities would be conducted in accordance with federal, state, and local regulations and appropriate BMPs would be developed and followed to avoid and/or minimize adverse impacts to visual resources.

Impacts to visual resources due to the Covered Activities would be localized and spread throughout the Plan Area over time and space. The degree of impacts to visual resources would be localized for each enrolled Project, and moderate in overall severity; impacts may be partially offset in some areas by beneficial impacts from an increase in preserved natural landscapes associated with the Conservation Program.

Past, present, and reasonably foreseeable future actions have resulted, and will result, in impacts to the visual resources in the Plan Area. Implementation of the Covered Activities and project operations would contribute to long-term cumulative impacts on visual resources in the Plan Area by adding maintained vegetation along pipeline centerlines, mainline valves, communication towers under 200 feet, and other aboveground facilities. New wind turbines, solar power towers, power lines, and communication towers are all reasonably foreseeable additions to the landscape within the Plan Area. As discussed in Section 5.2.3, structures taller than 200 feet would also be marked with FAA-approved lighting.

Because over 90% of the Plan Area is composed of cultivated croplands, herbaceous, and shrub/scrub lands (each of which is associated with a relatively open viewshed) in a rural setting, the taller features (e.g., wind turbines, solar power towers) would be a distinctive change to the viewshed in some areas, resulting in moderate adverse cumulative impacts to visual resources if facilities were constructed within the same viewshed. Up to 500,000 acres would be authorized for wind, solar, power line, and communication tower development under the LEPC Renewables HCP or CCAA (LPC Conservation LLC 2021, Service 2021a), in addition to the 500,000 acres that would be authorized under this HCP, totaling 1.1% total land cover within the Plan Area having potential impacts to visual resources. Viewshed changes from oil and gas development are expected to be adjacent to existing oil and gas infrastructure and utility rights-of-way, which would not significantly alter the landscape compared to the existing setting. Therefore, no significant cumulative impacts to visual resources are expected from the issuance of an ITP for LEPC.

Cumulative impacts to visual resources would primarily be associated with wind and solar projects that are reasonably foreseeable within the Plan Area. Operation of wind turbines would create shadow flicker, which is the effect of the sun shining through the rotating blades of an operating wind turbine, casting moving shadows that appear to flicker (U.S. Department of Energy 2020). Shadow flicker can be perceived as a nuisance to nearby home owners. Operation of solar PV panels and power towers would create glare, which could result in adverse impacts to nearby residences, drivers along area roadways, and nearby airports. As part of the state and local permit process, as well as general due diligence, most wind and solar projects would be expected to conduct project-specific analyses to model impacts to affected residences. As visual impacts from shadow flicker and glare from solar panels would be localized and would be conducted in accordance with state and local siting requirements and/or general industry best practices, cumulative impacts due to wind and solar projects are not expected to be significant.

### **5.2.3.2 Alternative 3 (No-Action)**

Under the No-Action Alternative, a similar level oil and gas development would likely occur over a 30-year period within the Plan Area. As such, impacts to visual resources would be similar to those described for Alternatives 1 and 2 as projects would be developed in accordance with federal, state, and local regulations. However, the No-Action Alternative would not require habitat mitigation; therefore, no beneficial impacts to visual resources would occur through the increase in preserved natural landscapes. Under the No-Action Alternative, the degree of impacts to visual resources would be localized for each enrolled Project, and moderate in overall severity for the same reasons described above for Alternatives 1 and 2.

## **5.3 Cultural Resources**

### **5.3.1 Alternatives 1 and 2**

Compliance with Section 106 of the NHPA, as amended, is required by law for all Federal undertakings. This includes issuance of Section 10(a)(1)(B) ITPs for activities covered in an HCP. Under Alternatives 1 and 2, prospective CI-holders, with the assistance of their cultural resource professional, would coordinate with the Service, SHPO(s), and THPO(s) to fulfill the requirements of Section 106 of the NHPA (16 USC 470f [1966], and its implementing regulations at 36 CFR part 800 [2000]). As described in detail in Appendix B, Worksheet 8 of the HCP (see Attachment A), for the portion of each project for which an ITP is being requested, prospective CI-holders would coordinate with the Service, SHPO(s), and THPO(s) to identify the area of potential effects (APE), which is the geographic area within which a project may cause changes in the character or use of historic properties. In addition, prospective CI-holders would identify the efforts taken to identify historic properties within the APE, and the results of those efforts (e.g., information from the pre-project review; information from any cultural/historical resources field studies; and the procedure that would be followed to address inadvertent discoveries of human remains, burials, funerary items, sacred objects, or objects of cultural patrimony found during project implementation). Enrolled projects would be required to implement site-specific BMPs and impact buffers during ground disturbance activities to avoid and minimize impacts to cultural resources identified during site-specific cultural resource surveys.

Covered Activities would not be conducted on lands registered on the NRHP (see Section 1.5 of the HCP). In addition, Alternative 1 and Alternative 2 would accommodate access to and ceremonial use of Tribal sacred sites by Native American religious practitioners and avoid adversely affecting the physical integrity of such sacred sites (see Section 1.7 of the HCP).

Habitat mitigation that would occur as part of the Conservation Program under the HCP or CCAA would result in the preservation of existing grasslands and conversion of cultivated croplands to restored grasslands, potentially protecting existing cultural resources from future development. Therefore, the degree of both short- and long-term effects to cultural resources is characterized as low.

Past, present, and reasonably foreseeable future actions have resulted, and will result, in impacts to cultural resources. Impacts have likely occurred during soil disturbing activities and artifact collection. Implementation of the Covered Activities would not be expected to contribute to the cumulative impacts of known cultural resources based on compliance with state and federal laws that protect and mitigate impacts to cultural resources; therefore, cumulative effects to cultural resources are not anticipated.

### **5.3.2 Alternative 3 (No-Action)**

Under the No-Action Alternative, a similar level of oil and gas development would likely occur over a 30-year period within the Plan Area. As such, impacts to cultural resources would be similar as what is described for Alternatives 1 and 2 as projects would be developed in

accordance with federal, state, and local regulations. Therefore, both short- and long-term effects to cultural resources are expected to be low.

## **6 CONSULTATION AND COORDINATION**

### **6.1 Agency Coordination**

The Service will seek input from potentially affected tribal governments within and surrounding the Plan Area during the public comment period on the proposed HCP and this EA. We will respond to and address comments from tribal governments before reaching a final decision. In support of the application to provide incidental take coverage for LEPC resulting from habitat loss, fragmentation, and degradation from oil and gas development, the Applicant coordinated with the Service and would continue to coordinate with other applicable entities through the development of the HCP Advisory Board (see Section 9.1.2 of the HCP). Additionally, each individual project enrolled under the HCP or CCAA would be required to coordinate with all applicable federal, state, and local agencies to ensure compliance with the appropriate statutes and regulations and to inform project-specific LEPC impact analysis.

### **6.2 Distribution of the Draft Environmental Assessment**

In accordance with NEPA, this EA, as well as the HCP and other application materials, will be circulated for public review and comment. A 30-day public comment period will be initiated with the publication of the Notice of Availability in the FR. Comments received on this draft EA will be incorporated into and appended to the final EA.

**Attachment A. Oil and Gas Habitat Conservation Plan for the Lesser Prairie-Chicken**

*Available online at:*

<https://www.fws.gov/southwest/es/ArlingtonTexas>

**Attachment B. Federal- and State-Listed, Proposed, Candidate Species, and Critical Habitats with the Potential to Occur within the Plan Area and be Impacted by the Issuance of the Incidental Take Permit for Lesser Prairie-Chickens.**

**Table B-1. Federally listed Species with the Potential to Occur within the Plan Area for the Renewable (Wind and Solar) Energy, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
<b>Mammals</b>			
Black-footed Ferret <i>Mustela nigripes</i>	FE	SE – CO, KS	Limited to open habitat such as semi-arid grasslands, steppe, and shrub steppe. Black-footed ferrets are limited by prairie dog ( <i>Cynomys</i> spp.) occurrence, as they depend on prairie dogs for food and prairie dog burrows for shelter (U.S. Fish and Wildlife Service [Service] 2013).
Canada Lynx <sup>1</sup> <i>Lynx canadensis</i>	FT	SE – CO	Prefers moist, boreal forest with cold, snowy winters and a high density of snowshoe hares ( <i>Lepus americanus</i> ) as the main prey base (NatureServe 2020). This species does not occur in similar habitat as the lesser prairie chicken (LEPC), shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an Incidental Take Permit (ITP) for LEPC.
New Mexico Meadow Jumping Mouse <i>Zapus hudsonius luteus</i>	FE	SE – NM	Riparian communities and adjacent uplands in grassland and shrub-scrub habitats with tall, emergent herbaceous forbs and sedges (Service 2014b).
Northern Long-eared Bat <sup>1</sup> <i>Myotis septentrionalis</i>	FT	NL	Found in forest interior and riparian areas (Lausen 2009). Typically avoids open habitats (Owen et al. 2003). Hibernates in caves, mines, and sometimes buildings. In summer, roosts singly or in colonies underneath tree bark or in tree cavities (Service 2014a). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Penasco Least Chipmunk <i>Tamias minimus atristriatus</i>	FC	SE – NM	Subalpine Thurber's fescue ( <i>Festuca thurberi</i> ) meadow with deciduous shrubs or upper montane coniferous forest (Frey and McKibben 2018).
Preble's Meadow Jumping Mouse <i>Zapus hudsonius preblei</i>	FT	ST – CO	Dense, herbaceous riparian habitat and adjacent upland grasslands (Service 2018).
<b>Birds</b>			
Eastern Black Rail* <sup>1</sup> <i>Laterallus jamaicensis</i> spp. <i>jamaicensis</i>	FT	ST – TX	Wetland-dependent species inhabiting palustrine and estuarine wetlands, such as wet grasslands and emergent marshes. Wetlands can be of varying salinity, but the species has a preference for emergent wetlands with dense, persistent, overhead herbaceous cover (Service 2020a). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-1. Federally listed Species with the Potential to Occur within the Plan Area for the Renewable (Wind and Solar) Energy, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
Golden-cheeked Warbler <sup>1</sup> <i>Dendroica chrysoparia</i>	FE	SE – TX	Mature, closed canopy Ashe juniper ( <i>Juniperus ashei</i> ) woodlands (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Mexican Spotted Owl <sup>1</sup> <i>Strix occidentalis lucida</i>	FT	ST – CO, TX	Spotted owls are residents of old-growth or mature forests that possess complex structural components (uneven aged stands, high canopy closure, multi-storied levels, high tree density; NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Northern Aplomado Falcon <i>Falco femoralis septentrionalis</i>	FE, EXPN	SE – NM, TX	Open terrain with scattered trees or shrubs such as yucca ( <i>Yucca</i> spp.)-covered sand ridges in coastal prairies, riparian areas adjacent to grasslands, and in desert grasslands with scattered mesquite ( <i>Prosopis</i> spp.) and yucca (Service 1990).
Piping Plover <sup>**1</sup> <i>Charadrius melodus</i>	FT	ST – CO, KS, NM, TX	Shorelines around small alkaline lakes, river islands and adjacent sand pits, reservoir beaches, beaches surrounding large lakes, and pond shorelines (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Red Knot <sup>1</sup> <i>Calidris canutus rufa</i>	FT	ST – TX	Breeding habitats are elevated and sparsely vegetated ridges or slopes. They are often adjacent to wetlands and lake edges for feeding. Wintering and migration habitats are often muddy or sandy coastal areas, such as the mouths of bays and estuaries, and tidal flats (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i>	FE	SE – CO, NM, TX	Dense, forested riparian habitats are required for nesting; however, migration and foraging habitat includes old field, shrubland/chaparral, and mixed hardwood forest (NatureServe 2020).

**Table B-1. Federally listed Species with the Potential to Occur within the Plan Area for the Renewable (Wind and Solar) Energy, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
Western Yellow-billed Cuckoo <sup>1,2</sup> <i>Coccyzus americanus occidentalis</i>	FT	NL	Generally breeds in deciduous riparian woodland, especially including dense stands of cottonwood ( <i>Populus</i> spp.) and willow ( <i>Salix</i> spp.), but also including mesquite and salt-cedar ( <i>Tamarisk</i> spp.) in some areas. Along the Lower Colorado River, yellow-billed cuckoos occupied riparian areas that had higher canopies, denser cover in the upper layers of the canopy, and sparser shrub layers when compared to unoccupied sites; at the landscape level, the amount of cottonwood-willow-dominated vegetation cover in the landscape and the width of riparian habitat appeared to influence positively cuckoo distribution and abundance. Nests are placed in dense cover of trees, shrubs, or vines, often in mature willows, cottonwoods, and sometimes tamarisk (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Whooping Crane <i>Grus americana</i>	FE, EXPN	SE – CO, KS, NM, TX	Coastal marshes and estuaries, inland marshes, lakes, ponds, riparian areas, wet meadows and rivers, and agricultural fields (NatureServe 2020).
<b>Fish</b>			
Arkansas River Shiner <sup>1</sup> <i>Notropis girardi</i>	FT	SE – KS, NM ST – TX	Wide, shallow, unshaded creeks and small to large rivers, especially those with silt and sand substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Comanche Springs Pupfish <sup>1</sup> <i>Cyprinodon elegans</i>	FE	SE – TX	Freshwater springs, marshes, and canals with mud substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Devils River Minnow <sup>1</sup> <i>Dionda diaboli</i>	FT	ST – TX	Endemic to Texas. Fast-flowing, clear, spring-fed water with gravel substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-1. Federally listed Species with the Potential to Occur within the Plan Area for the Renewable (Wind and Solar) Energy, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
Greenback Cutthroat Trout <sup>1</sup> <i>Oncorhynchus clarkii stomias</i>	FT	ST – CO	Mountain streams with fast-flowing water and lakes with overhanging banks or vegetation cover (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Leon Springs Pupfish <sup>1</sup> <i>Cyprinodon bovinus</i>	FE	SE – TX	Endemic to Texas. Shallow saline springs, pools, and outflow springs. Common in outflows from Diamond Y Spring (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Mexican Blindcat (catfish) <sup>1</sup> <i>Prietella phreatophila</i>	FE	SE – TX	Subterranean waters in wells, mine shafts, and caves with silt substrate (IUCN 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Pallid Sturgeon <sup>1</sup> <i>Scaphirhynchus albus</i>	FE	SE – KS	Turbid riverine waters, strong currents with gravel or sand substrate. Sometimes occurs in reservoirs. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Pecos Bluntnose Shiner <sup>1</sup> <i>Notropis simus pecosensis</i>	FT	SE – NM	Main river channels with large flows and sand, gravel, or silt substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Pecos Gambusia <sup>1</sup> <i>Gambusia nobilis</i>	FE	SE – NM, TX	Clear spring waters high in calcium carbonate, waters with fairly constant temperature and vegetation (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Peppered Chub <i>Macrhybopsis tetranema</i>	PE	SE – KS ST – NM, TX	Large, permanently flowing streams with clean, fine sand substrates (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Rio Grande Silvery Minnow <sup>1</sup> <i>Hybognathus amarus</i>	EXPN	SE – NM, TX	Pools and backwaters of creeks and small to large rivers with slow to moderate flowing waters associated with the Rio Grande River. Typically occurs in shallow water with silt substrate. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-1. Federally listed Species with the Potential to Occur within the Plan Area for the Renewable (Wind and Solar) Energy, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
Sharptnose Shiner <sup>1</sup> <i>Notropis oxyrhynchus</i>	FE	SE – TX	Endemic to Texas. Medium to large rivers or pools with sand, gravel, or mud substrate and shallow water (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Smalleye Shiner <sup>1</sup> <i>Notropis buccula</i>	FE	SE – TX	Endemic to Texas. Small to medium river channels with shallow water and sand substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Topeka Shiner <sup>1</sup> <i>Notropis topeka</i>	FE	ST – KS	Open, permanent pools of small, clear headwaters and creeks (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
<b>Invertebrates</b>			
American Burying Beetle <sup>2</sup> <i>Nicrophorus americanus</i>	FT, EXPN	SE – KS	Occurs in a variety of habitats, such as grassland, shrubland, and hardwood forests. May occur in areas with mowed or grazed fields to dense shrub areas. Adults typically live aboveground, but may overwinter in soil and lay eggs in soil next to buried carcasses. (NatureServe 2020)
Diamond Tryonia <sup>1</sup> <i>Pseudotryonia adamantina</i>	FE	SE – TX	Endemic to Texas. Lives near small springs, seeps, and marshes, and flowing water. Especially near cattail and sedge-dominated wetlands. Typically lives on muddy substrates. (NatureServe 2020)  This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Diminutive Amphipod <sup>1</sup> <i>Gammarus hyalleloides</i>	FE	SE – TX	Endemic to Texas. Lives on rocky or gravel substrate in warm, mineralized, flowing spring water originating from caves (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Gonzales Tryonia <sup>1</sup> <i>Tryonia circumstriata</i>	FE	SE – TX	Endemic to Texas. Lives in springs, seeps, and marshes near sedges and cattails, especially on mud substrates (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-1. Federally listed Species with the Potential to Occur within the Plan Area for the Renewable (Wind and Solar) Energy, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
Koster's Springsnail <sup>1</sup> <i>Juturnia kosteri</i>	FE	SE – NM	Endemic to New Mexico. Lives in springs with slow to moderate flowing water, typically on silt, sand, or gravel compacted substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Monarch Butterfly <sup>2</sup> <i>Danaus plexippus</i>	FC	NL	Adult monarch butterflies feed on nectar from a wide variety of flowers, but larvae only feed on milkweed ( <i>Asclepias</i> spp.). Adults feed in fields, along roads, open areas, wet areas, and gardens on milkweeds and other flowering plants. Breeding only occurs where there are milkweed plants (US Forest Service 2021)
Noel's Amphipod <sup>1</sup> <i>Gammarus desperatus</i>	FE	SE – NM	Endemic to New Mexico. Lives in warm, mineralized water (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Pecos Amphipod <sup>1</sup> <i>Gammarus pecos</i>	FE	SE – TX	Springs or brooks near the Pecos River (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Pecos Assimineea Snail <sup>1</sup> <i>Assimineea pecos</i>	FE	SE – NM, TX	Aquifer-fed spring systems in desert grasslands of the Pecos River basin. Typically found in moist areas near flowing water, under vegetation such as grasses or sedges. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Phantom Springsnail <sup>1</sup> <i>Pyrgulopsis texana</i>	FE	SE – TX	Endemic to Texas. Lives in mineralized spring water near caves, especially in shallow water. Lives near the sources of three springs and is found on hard substrates. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Phantom Tryonia <sup>1</sup> <i>Tryonia cheatumi</i>	FE	SE – TX	Endemic to Texas. Lives in springs, namely the Phantom Lake Spring and associated waters, especially on mud or gravel substrates (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Roswell Springsnail <sup>1</sup> <i>Pyrgulopsis roswellensis</i>	FE	SE – NM	Endemic to New Mexico. Lives on pebbles and silt, and sometimes on mud or vegetation underwater. Typically in spring heads and runs with slow to moderate flowing water. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-1. Federally listed Species with the Potential to Occur within the Plan Area for the Renewable (Wind and Solar) Energy, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
Texas Fatmucket <sup>1</sup> <i>Lampsilis bracteata</i>	FC	ST – TX	Endemic to Texas. Lives in the Texas Hill Country in streams and smaller rivers. Typically in shallow water with sand, mud, and gravel substrates, and occurs near bedrock along banks. (NatureServe 2020)  This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Texas Fawnsfoot <sup>1</sup> <i>Truncilla macrodon</i>	FC	ST – TX	Endemic to Texas. Lives in rivers and large streams with moderate flowing water in sand, gravel, and mud substrates (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Texas Hornshell <sup>1</sup> <i>Popenaias popeii</i>	FE	SE – NM, TX	In water at riverbanks, crevices and shelves near boulders, especially in sand and cobble substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Texas Pimpleback <sup>1,2</sup> <i>Quadrula petrina</i>	FC	ST – TX	Endemic to Texas. Lives in shallow slow to moderate flowing water, in mud, sand, gravel, and cobble substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
<b>Flowering Plants</b>			
Bunched Cory Cactus <i>Coryphantha ramosa</i>	FT	ST – TX	Chihuahuan Desert succulent scrub on rocky slopes, ledges, and gravelly limestone flats (NatureServe 2020).
Gypsum Wild-buckwheat <i>Eriogonum gypsophilum</i>	FT	SE – NM	Semi-arid open grassland dominated by grama species and creosote bush ( <i>Larrea tridentata</i> ) communities (NatureServe 2020).
Holy Ghost Ipomopsis <sup>1</sup> <i>Ipomopsis sancti-spiritus</i>	FE	SE – NM	Forest edge habitat and along roadsides within Santa Fe National Forest (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Kuenzler Hedgehog Cactus <i>Echinocereus fendleri</i> var. <i>kuenzleri</i>	FT	SE – NM	Grassland and herbaceous habitat on the fringes of pinyon-juniper ( <i>Pinus-Juniperus</i> spp.) savannah (NatureServe 2020).

**Table B-1. Federally listed Species with the Potential to Occur within the Plan Area for the Renewable (Wind and Solar) Energy, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
Lee Pincushion Cactus <sup>1</sup> <i>Coryphantha sneedii</i> var. <i>leei</i>	FT	SE – NM	Restricted to Tansil Limestone Formation on north-facing ledges, slopes, and ridgetops; known populations within Carlsbad Caverns National Park (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Lloyd's Mariposa Cactus <i>Echinomastus mariposensis</i>	FT	ST – TX	Arid desert and shrubland/chaparral habitats with gravely, limestone-derived soils on gentle slopes (NatureServe 2020).
Pecos Sunflower <sup>1</sup> <i>Helianthus paradoxus</i>	FT	SE – NM ST – TX	Desert wetlands associated with springs; requires permanent wetlands for survival. Most known populations are located within protected areas in New Mexico and Texas (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Sneed Pincushion Cactus <i>Coryphantha sneedii</i> var. <i>sneedii</i>	FE	SE – TX	Desert and desert grassland habitats with limestone ledges and slopes dominated by creosote bush, yucca species, and grama species (NatureServe 2020).
Texas Poppy-mallow <i>Callirhoe scabriuscula</i>	FE	SE – TX	Grasslands, shin oak shrublands, and mesquite woodlands with deep, loose sandy soil from alluvial deposits of the Colorado River (NatureServe 2020).
Texas Snowbells <sup>1</sup> <i>Styrax texanus</i>	FE	SE – TX	Limestone cliffs, bluffs, and ledges within riparian habitat and surrounded by sycamore-little walnut ( <i>Platanus</i> spp.- <i>Juglans microcarpa</i> ), oak ( <i>Quercus</i> spp.), or oak-juniper woodlands (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Tobusch Fishhook Cactus <i>Sclerocactus brevihamatus</i> ssp. <i>tobuschii</i>	FT	SE – TX	Riparian areas and adjacent shortgrass grasslands and semi-desert shrublands interspersed with oak-juniper woodlands (NatureServe 2020).
Ute Ladies'-tresses <sup>1</sup> <i>Spiranthes diluvialis</i>	FT	NL	Wet meadows, riparian corridors, perennial streams, and floodplains with regular spring flooding or frequent large-scale floods (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Western Prairie Fringed Orchid <sup>1,2</sup> <i>Platanthera praeclara</i>	FT	ST – CO	Moist to wet calcareous tallgrass prairies and sedge meadows with perennial flooding (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-1. Federally listed Species with the Potential to Occur within the Plan Area for the Renewable (Wind and Solar) Energy, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
Wright's Marsh Thistle <sup>1</sup> <i>Cirsium wrightii</i>	PT	SE – NM	Marshy wetlands near springs and requires saturated soils and surface/subsurface water flows (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

EXPN = population is experimental non-essential in survival of the overall species, FC = candidate for federal listing, FE = federally endangered, FT = federally threatened, NL = not listed, PE = proposed endangered for federal listing, PT = proposed threatened for federal listing, SE = state endangered, ST = state threatened

<sup>1</sup> Federally listed species with the potential to occur within the Plan Area but not expected to occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands are unlikely to be impacted by the issuance of an ITP for LEPC and have been dismissed from detailed analysis.

<sup>2</sup> Identified through our state-level threatened and endangered species analysis as potentially occurring within the Plan Area but not identified through the Information for Planning and Consultation (IPaC; Service 2021). These additional sources may include:

CPWD (Colorado Parks and Wildlife Department). 2021a. Species Profiles. CPWD, Denver, Colorado. Accessed July 2021. Available online: <https://cpw.state.co.us/learn/Pages/SpeciesProfiles.aspx>

\_\_\_\_\_. 2021b. Threatened and Endangered List. CPWD, Denver, Colorado. Accessed July 2021. Available online: <https://cpw.state.co.us/learn/Pages/SOC-ThreatenedEndangeredList.aspx>

Colorado Natural Heritage Program. No date. CPWD: Wildlife Species Profiles. Accessed July 2021. Available online: <https://cpw.state.co.us/learn/Pages/SpeciesProfiles.aspx>

NMDGF (New Mexico Department of Game and Fish). 2021. Biota Information System of New Mexico. NMDGF, Santa Fe, New Mexico. Accessed July 2021. Available online: <https://www.bison-m.org/SuperSearch.aspx#>

KDWP (Kansas Department of Wildlife and Parks). 2021. Threatened and Endangered Wildlife: List of All Kansas Counties. Accessed July 2021. Available online: <https://ksoutdoors.com/Services/Threatened-and-Endangered-Wildlife/List-of-all-Kansas-Counties/>

ONHI (Oklahoma Natural Heritage Inventory). 2021. Federal and State Endangered, Threatened, and Candidate Species in Oklahoma by County. ONHI, Norman, Oklahoma. Accessed July 2021. Available online: <http://www.oknaturalheritage.ou.edu/content/biodiversity-info/endangered-species/index.php>

TPWD (Texas Parks and Wildlife Department). 2020. Updated List of State T & E Species in Texas - Effective March 30, 2020. TWPD, Austin, Texas. Accessed July 21, 2021. Available online: [https://tpwd.texas.gov/huntwild/wild/wildlife\\_diversity/nongame/listed-species/media/fedState-ListedSpeciesComplete-3302020.pdf](https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/nongame/listed-species/media/fedState-ListedSpeciesComplete-3302020.pdf)

\_\_\_\_\_. 2021. Rare, Threatened, and Endangered Species of Texas. TWPD, Austin, Texas. Accessed July 2021. Available online: <https://tpwd.texas.gov/gis/rtest/>

\* The eastern black rail is listed as “black rail (*Laterallus jamaicensis*)” by the TPWD. The eastern black rail subspecies is the only subspecies found in the Plan Area (see NatureServe 2020), so eastern black rail is synonymous with black rail in the context of this document.

\*\* CPWD lists the subspecies of the piping plover (*Charadrius melodus circumcinctus*) as a state-listed threatened species. For the purposes of this analysis, the parent species and subspecies will be considered to be the same.

**Table B-1. Federally listed Species with the Potential to Occur within the Plan Area for the Renewable (Wind and Solar) Energy, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
--------------	----------------	--------------	----------------------------

Sources:

- Frey, J. K., and F. McKibben. 2018. 2018 Year End Report. Distribution, Abundance, and Habitat Selection by the Penasco Least Chipmunk (*Neotamias minimus atristriatus*). Submitted to NMDGF, share with Wildlife Program, Ecological and Environmental Planning Division. December 19, 2018. Available online: <http://www.wildlife.state.nm.us/download/conservation/share-with-wildlife/reports/2018/Distribution-abundance-and-habitat-selection-by-the-Penasco-least-chipmunk-Tamias-minimus-atristriatus-revealed-by-N-mixture-models--Jennifer-Frey.pdf>
- IUCN (International Union for the Conservation of Nature). 2020. Mexican Blindcat (*Prietella phreatophila*). The IUCN Red List of Threatened Species. Version 2020-1. Information online: <https://www.iucnredlist.org>; <https://www.iucnredlist.org/species/18136/1725896#habitat-ecology>
- Lausen, C. 2009. Status of the Northern Myotis (*Myotis septentrionalis*) in Alberta: Update 2009. Alberta Wildlife Status Report No. 3 (Update 2009). Government of Alberta - Fish and Wildlife Division; Alberta Conservation Association and Alberta Sustainable Resource Development, Available online: <https://open.alberta.ca/dataset/cc051d7c-b9b1-46b1-a71a-2af714a365ce/resource/bba3872d-bf02-48f4-ab37-9ffb7cdebc30/download/2009-sar-statusnorthernmyotisalberta-2009update-may2009.pdf>
- NatureServe. 2020. NatureServe Explorer: An Online Guide to Species and Ecosystems. Accessed March 2020. Available online: <https://explorer.natureserve.org/>
- Owen, S. F., M. A. Menzel, W. M. Ford, B. R. Chapman, K. V. Miller, J. W. Edwards, and P. B. Wood. 2003. Home-Range Size and Habitat Used by the Northern Myotis (*Myotis septentrionalis*). American Midland Naturalist 150(2): 352-359.
- Service (U.S. Fish and Wildlife Service). 1990. Northern Aplomado Falcon Recovery Plan. Service, Albuquerque, New Mexico. 56 pp. Available online: [https://ecos.fws.gov/docs/recovery\\_plan/northern%20aplomado%20falcon%20recovery%20plan%201990.pdf](https://ecos.fws.gov/docs/recovery_plan/northern%20aplomado%20falcon%20recovery%20plan%201990.pdf)
- \_\_\_\_\_. 2013. Recovery Plan for the Black-Footed Ferret (*Mustela nigripes*). Service, Denver, Colorado. 157 pp. Available online: [https://ecos.fws.gov/docs/recovery\\_plan/20131108%20BFF%202nd%20Rev.%20Final%20Recovery%20Plan.pdf](https://ecos.fws.gov/docs/recovery_plan/20131108%20BFF%202nd%20Rev.%20Final%20Recovery%20Plan.pdf)
- \_\_\_\_\_. 2014a. Northern Long-Eared Bat Interim Conference and Planning Guidance. Service Regions 2, 3, 4, 5, and 6. January 6, 2014. Available online: <http://www.fws.gov/northeast/virginiafield/pdf/NLEBinterimGuidance6Jan2014.pdf>
- \_\_\_\_\_. 2014b. Species Status Assessment Report. New Mexico Meadow Jumping Mouse (*Zapus hudsonius luteus*). Prepared by the Listing Review Team, Service, Albuquerque, New Mexico. May 27, 2014. Available online: <https://ecos.fws.gov/ServCat/DownloadFile/161605>
- \_\_\_\_\_. 2018. Preble's Meadow Jumping Mouse Recovery Plan, Colorado. Service Region 6, Lakewood, Colorado. 148 pp Available online: [https://ecos.fws.gov/docs/recovery\\_plan/Final\\_Draftpreblesrecoveryplan\\_10032018\\_signed.pdf](https://ecos.fws.gov/docs/recovery_plan/Final_Draftpreblesrecoveryplan_10032018_signed.pdf)
- \_\_\_\_\_. 2020a. Endangered and Threatened Wildlife and Plants; Threatened Species Status for Eastern Black Rail With a Section 4(d) Rule. 85 Federal Register (FR) 196: 63764-63803. October 8, 2020.
- \_\_\_\_\_. 2021. IPaC. Service Environmental Conservation Online System (ECOS). Accessed July 2021. Available online: <http://ecos.fws.gov/ipac/>
- USFS (U.S. Forest Service), 2021. Monarch Butterfly Habitat Needs. USFS, Washington, Accessed July 2021. Available online: [https://www.fs.fed.us/wildflowers/pollinators/Monarch\\_Butterfly/habitat/](https://www.fs.fed.us/wildflowers/pollinators/Monarch_Butterfly/habitat/)

**Table B-2. Federally Designated Critical Habitat that Occurs within the Plan Area for the Renewable (Wind and Solar) Energy, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Critical Habitat Notes
<b>Birds</b>			
Whooping Crane <i>Grus americana</i>	FE, EXPN	SE – CO, KS, NM, TX	Three critical habitat units for the whooping crane occur within the Plan Area (Service 1978). <ul style="list-style-type: none"> <li>• Unit 4: Cheyenne Bottoms State Waterfowl Management Area (Kansas)</li> <li>• Unit 5: Quivira National Wildlife Refuge (Kansas)</li> <li>• Unit 8: Salt Plains National Wildlife Refuge (Oklahoma)</li> </ul> All three critical habitat units are managed by either a state or federal agency, and are thereby precluded from the Covered Activities under the HCP, and would not be impacted by the issuance of an Incidental Take Permit (ITP) for lesser prairie chicken (LEPC).
<b>Fish</b>			
Arkansas River Shiner <i>Notropis girardi</i>	FT	SE – KS, NM  ST – TX	Two river reaches designated as critical habitat for the Arkansas River Shiner partially occur within the Plan Area (Service 2005). <ul style="list-style-type: none"> <li>• Unit 1b: Canadian River from south of Fay, Oklahoma, to the edge of the Plan Area east of Hinton, Oklahoma.</li> <li>• Unit 3: Cimarron River from southwest of Kismet, Kansas, to the edge of the Plan Area east of Dover, Oklahoma.</li> </ul>
Leon Springs Pupfish <i>Cyprinodon bovinus</i>	FE	SE – TX	Diamond Y Springs and its outflow, Leon Creek (Diamond Draw), from the origin to one mi (1.6 km) past Texas State Highway 18 crossing (Service 1980). Diamond Y Springs is located entirely on private lands managed by The Nature Conservancy, and is thereby precluded by the Covered Activities under the HCP, and would not be impacted by the issuance of an ITP for LEPC.
Pecos Bluntnose Shiner <i>Notropis simus pecosensis</i>	FT	SE – NM	Two river reaches designated as critical habitat for the Pecos bluntnose shiner partially occur within the western edge of the Plan Area in New Mexico (Service 1987). <ul style="list-style-type: none"> <li>• Complex 1: Pecos River from north boundary of 1N; 26E; NE1/4 Sec 2 downstream to south boundary of 5S; 25E; SW1/4 Sec 35.</li> <li>• Complex 2: Pecos River from west boundary of 14S; 27E; NW1/4 Sec 7 downstream to 17S; 27E; NW1/4 Sec 18 (US Highway 82 bridge).</li> </ul>
Peppered Chub <i>Macrhybopsis tetranema</i>	PE	SE – KS  ST – NM, TX	Four units are designated as critical habitat in the Plan Area. Only one unit, Unit 1 - Upper South Canadian River, is reported as occupied by the species. The remaining three units are considered unoccupied, but essential habitat for the conservation of the peppered chub (Service 2020a). Each unit includes river habitat up to bank full height.

**Table B-2. Federally Designated Critical Habitat that Occurs within the Plan Area for the Renewable (Wind and Solar) Energy, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Critical Habitat Notes
			<ul style="list-style-type: none"> <li>• Unit 1 - Upper South Canadian River: Unit 1 consists of approximately 197.16 river mi (317.29 river km) of the South Canadian River originating from Ute Dam west of Logan, New Mexico, and extending downstream to Lake Meredith in Texas, including part of Revuelto Creek from the Interstate Highway 40 crossing to the downstream confluence with the South Canadian River, New Mexico. Land ownership in Unit 1 is largely private or “other” (non-federal ownership, likely to be tribal or private).</li> <li>• Unit 2 - Lower South Canadian River.: Unit 2 is approximately 400.01 river mi (643.86 river km) from the South Canadian River US Highway 83 bridge north of Canadian, Texas, and extending downstream to the US Highway 75 bridge northwest of Calvin, Oklahoma.</li> <li>• Unit 3 - Arkansas/Ninnescah River: This unit is about 178.96 river mi (288.02 river km) of the South Fork Ninnescah River originating at the Highway 54/400 bridge east of Pratt, Kansas, and extending downstream to the River Road Bridge east of Newkirk, Oklahoma.</li> <li>• Unit 4- Cimarron River: Unit 4 is about 291.82 river mi (469.63 river km) of the Cimarron River from the U.S. Highway 183 bridge east of Englewood, Kansas, and extending downstream to the Oklahoma 51 bridge northeast of Oilton, Oklahoma.</li> </ul>
<b>Invertebrates</b>			
Diamond Tryonia <i>Pseudotryonia adamantina</i>	FE	SE – TX	The only critical habitat unit, Diamond Y Springs, falls within the southernmost portion of the Plan Area, north of Fort Stockton, Texas (Service 2013). Diamond Y Springs is located entirely on private lands managed by The Nature Conservancy, and is thereby precluded by the Covered Activities under the HCP, and would not be impacted by the issuance of an ITP for LEPC.
Gonzales Tryonia <i>Tryonia circumstriata</i>	FE	SE – TX	The only critical habitat unit for this species in the Plan Area is the same for unit for diamond tryonia, Diamond Y Springs, and the unit is precluded by the covered activities as described above for diamond tryonia.
Koster's Springsnail <i>Juturnia kosteri</i>	FE	SE – NM	<p>Several waterbodies designated as critical habitat for Koster’s springsnail occur within the western portion of the Plan Area, east of Chaves, New Mexico (Service 2011), totaling 61 ac (25 ha).</p> <ul style="list-style-type: none"> <li>• Unit 1: Sago/Bitter Creek Complex</li> <li>• Unit 2a: Springsnail/Amphipod Impoundment Complex</li> <li>• Unit 2a/b: Springsnail/Amphipod/Assimineia Impoundment Complex</li> </ul>

**Table B-2. Federally Designated Critical Habitat that Occurs within the Plan Area for the Renewable (Wind and Solar) Energy, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Critical Habitat Notes
Noel's Amphipod <i>Gammarus desperatus</i>	FE	SE – NM	Several waterbodies designated as critical habitat for Noel's amphipod occur within the western portion of the Plan Area, east of Chaves, New Mexico (Service 2011), totaling 64 ac (26 ha). <ul style="list-style-type: none"> <li>• Unit 1: Sago/Bitter Creek Complex. This unit is located entirely on lands owned and managed by the Service, within the Middle Tract of Bitter Lake National Wildlife Refuge, and is thereby precluded by the Covered Activities under the HCP, and would not be impacted by the issuance of an ITP for LEPC.</li> <li>• Unit 2a: Springsnail/Amphipod Impoundment Complex</li> <li>• Unit 2a/b: Springsnail/Amphipod/Assimineia Impoundment Complex</li> <li>• Unit 3: Rio Hondo Complex</li> </ul>
Pecos Amphipod <i>Gammarus pecos</i>	FE	SE – TX	The only critical habitat unit for this species in the Plan Area is the same for unit for diamond tryonia, Diamond Y Springs, and the unit is precluded by the covered activities as described above for diamond tryonia.
Pecos Assimineia Snail <i>Assimineia pecos</i>	FE	SE – NM, TX	Several waterbodies designated as critical habitat for Pecos assimineia snail occur within the western portion of the Plan Area, east of Chaves, New Mexico, and north of Fort Stockton, Texas (Service 2011). <ul style="list-style-type: none"> <li>• Unit 1: Sago/Bitter Creek Complex. This unit is located entirely on lands owned and managed by the Service, within the Middle Tract of Bitter Lake National Wildlife Refuge, and is thereby precluded by the Covered Activities under the HCP, and would not be impacted by the issuance of an ITP for LEPC.</li> <li>• Unit 2a/b: Springsnail/Amphipod/Assimineia Impoundment Complex</li> <li>• Unit 2b: Assimineia Impoundment Complex</li> <li>• Unit 4: Diamond Y Springs. This unit is precluded by the covered activities as described above for diamond tryonia.</li> </ul>
Roswell Springsnail <i>Pyrgulopsis roswellensis</i>	FE	SE – NM	Several waterbodies designated as critical habitat for the Roswell springsnail occur within the western portion of the Plan Area, east of Chaves, New Mexico (Service 2011), totaling 61 ac. <ul style="list-style-type: none"> <li>• Unit 1: Sago/Bitter Creek Complex. This unit is located entirely on lands owned and managed by the Service, within the Middle Tract of Bitter Lake National Wildlife Refuge, and is thereby precluded by the Covered Activities under the HCP, and would not be impacted by the issuance of an ITP for LEPC.</li> <li>• Unit 2a: Springsnail/Amphipod Impoundment Complex</li> <li>• Unit 2a/b: Springsnail/Amphipod/Assimineia Impoundment Complex</li> </ul>
Texas Hornshell <sup>1</sup> <i>Popenaias popeii</i>	FE	SE – NM, TX	Critical habitat for this species is found in the Plan Area, in Eddy County, New Mexico, and Terrell County, and Val Verde County, Texas (Service 2021a). The critical units and subunits include: <ul style="list-style-type: none"> <li>• Unit 2 - Pecos River Unit. This unit consists of 137.9 km (85.7 mi) occupied habitat in private, non-governmental organization (NGO), and federal ownership of the Pecos River in Val Verde and Terrell</li> </ul>

**Table B-2. Federally Designated Critical Habitat that Occurs within the Plan Area for the Renewable (Wind and Solar) Energy, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Critical Habitat Notes
			Counties, Texas. Live Texas hornshell were collected from this unit in 2016, and other living Texas hornshell were likely in the unit at that time. Special management may be necessary to improve water quality.
<b>Flowering Plants</b>			
Pecos Sunflower <i>Helianthus paradoxus</i>	FT	SE – NM ST – TX	Several areas designated as critical habitat for the Pecos sunflower occur within the Plan Area (Service 2008b). <ul style="list-style-type: none"> <li>• Bitter Lake National Wildlife Refuge (New Mexico). This area is owned and managed by the Service and is thereby precluded by the Covered Activities under the HCP, and would not be impacted by the issuance of an ITP for LEPC.</li> <li>• Bitter Lake National Wildlife Refuge Farm (New Mexico). This area is owned and managed by the Service and is thereby precluded by the Covered Activities under the HCP, and would not be impacted by the issuance of an ITP for LEPC.</li> <li>• Lea Lake as Bottomless Lakes State Park (New Mexico). This area is owned by the State of New Mexico and managed by the New Mexico Parks and Recreation Division. This area is thereby precluded by the Covered Activities under the HCP, and would not be impacted by the issuance of an ITP for LEPC.</li> <li>• City of Roswell Land – wetland complex (New Mexico)</li> <li>• Oasis Dairy – wetland complex (New Mexico)</li> <li>• Dexter Cienaga – wetland complex (New Mexico)</li> <li>• Diamond Y Spring – wetland complex (Texas). This unit is located entirely on private lands managed by The Nature Conservancy, and is thereby precluded by the Covered Activities under the HCP, and would not be impacted by the issuance of an ITP for LEPC.</li> </ul>
Wright's Marsh Thistle <sup>1</sup> <i>Cirsium wrightii</i>	PT	NL	One of eight units of critical habitat for this species occur in counties within the Plan Area (Service 2020b): <ul style="list-style-type: none"> <li>• Unit 3: Bitter Lake, Chaves County, New Mexico. Unit 3 consists of 19.0 ha (47.0 ac) in Chaves County, New Mexico, and is composed of lands under federal management, specifically the Service’s Bitter Lake National Wildlife Refuge (NWR). This unit is managed entirely by the Service, This unit consists of two subunits, and special management considerations or protection may be required and could include watershed/wetland restoration efforts.                             <ul style="list-style-type: none"> <li>○ Subunit 3a: NWR Unit 5 Subunit 3a consists of 3.16 ha (7.8 ac) in Chaves County, New Mexico, within Wetland Management Unit 5 on Bitter Lake NWR.</li> <li>○ Subunit 3b: NWR Unit 6 Subunit 3b consists of 15.9 ha (39.2 ac) in Chaves County, New Mexico, within Wetland Management Unit 6 on Bitter Lake NWR.</li> </ul> </li> </ul>

**Table B-2. Federally Designated Critical Habitat that Occurs within the Plan Area for the Renewable (Wind and Solar) Energy, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Critical Habitat Notes
--------------	----------------	--------------	------------------------

EXPN = population is experimental non-essential in survival of the overall species, FC = candidate for federal listing, FE = federally endangered, FT = federally threatened, NL = not listed, PE = proposed endangered for federal listing, PT = proposed threatened for federal listing, SE = state endangered, ST = state threatened

HCP = Habitat Conservation Plan, LEPC = Lesser Prairie-Chicken (*Tympanuchus pallidicinctus*)

Most critical habitat designations from Service 2021b.

Sources:

- Service (U.S. Fish and Wildlife Service). 1978. Determination of Critical Habitat for the Whooping Crane; Final Rule. Department of the Interior, Service. 43 Federal Register (FR) 94: 20938-20942. May 15, 1978. Available online: [https://ecos.fws.gov/docs/federal\\_register/fr214.pdf](https://ecos.fws.gov/docs/federal_register/fr214.pdf)
- \_\_\_\_\_. 1980. Endangered and Threatened Wildlife and Plants; Listing of Leon Springs Pupfish as Endangered with Critical Habitat; Final Rule. Department of the Interior, Service. 45 FR 160: 54678-54681. August 15, 1980. Available online: [https://ecos.fws.gov/docs/federal\\_register/fr457.pdf](https://ecos.fws.gov/docs/federal_register/fr457.pdf)
- \_\_\_\_\_. 1981. Endangered and Threatened Plants; Determination of Two New Mexico Plants to be Endangered Species and Threatened Species, with Critical Habitat; Final Rule. Department of the Interior, Service. 46 FR 12: 5703-5733. January 19, 1981. Available online: [https://ecos.fws.gov/docs/federal\\_register/fr515.pdf](https://ecos.fws.gov/docs/federal_register/fr515.pdf)
- \_\_\_\_\_. 1987. Determination of Threatened Status for *Notropis simus pecosensis* (Pecos Bluntnose Shiner); Final Rule. Department of the Interior, Service. 52 FR 34: 5295-5303. February 20, 1987. Available online: [https://ecos.fws.gov/docs/federal\\_register/fr1228.pdf](https://ecos.fws.gov/docs/federal_register/fr1228.pdf)
- \_\_\_\_\_. 2004. Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the Mexican Spotted Owl; Final Rule. Department of the Interior, Service. 69 FR 168: 53182-53289. August 31, 2004. Available online: <https://www.govinfo.gov/content/pkg/FR-2004-08-31/pdf/04-19501.pdf>
- \_\_\_\_\_. 2005. Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the Arkansas River Basin Population of the Arkansas River Shiner (*Notropis girardi*); Final Rule. Department of the Interior, Service. 70 FR 197: 59808-59846. October 31, 2005. Available online: <https://www.govinfo.gov/content/pkg/FR-2005-10-13/pdf/05-20048.pdf#page=2>
- \_\_\_\_\_. 2008a. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Devils River Minnow; Final Rule. Department of the Interior, Service. 73 FR 156: 46988-47026. August 12, 2008. Available online: <https://www.govinfo.gov/content/pkg/FR-2008-08-12/pdf/E8-17985.pdf>
- \_\_\_\_\_. 2008b. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for *Helianthus paradoxus* (Pecos Sunflower); Final Rule. Department of the Interior, Service. 73 FR 63: 17762-17807. April 1, 2008. Available online: <https://www.govinfo.gov/content/pkg/FR-2008-04-01/pdf/E8-5811.pdf#page=2>
- \_\_\_\_\_. 2010. Endangered and Threatened Wildlife and Plants; Revised Critical Habitat for the Preble’s Meadow Jumping Mouse in Colorado; Final Rule. Department of the Interior, Service. 75 FR 240: 78430-78483. December 15, 2010. Available online: <https://www.govinfo.gov/content/pkg/FR-2010-12-15/pdf/2010-30571.pdf>
- \_\_\_\_\_. 2011. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Roswell Springsnail, Koster’s Springsnail, Noel’s Amphipod, and Pecos Assimineae; Final Rule. Department of the Interior, Service. 76 FR 109: 3306-33064. June 7, 2011. Available online: <https://www.govinfo.gov/content/pkg/FR-2011-06-07/pdf/2011-13227.pdf>
- \_\_\_\_\_. 2013. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Six West Texas Aquatic Invertebrates; Final Rule. Department of the Interior, Service. 78 FR 131: 40970-40966. June 9, 2013 Available online: <https://www.govinfo.gov/content/pkg/FR-2013-07-09/pdf/2013-16230.pdf>
- \_\_\_\_\_. 2014. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Sharpnose Shiner and Smalleye Shiner; Final Rule. Department of the Interior, Service. 79 FR 149: 45242-45271. August 4, 2014. Available online: <https://www.govinfo.gov/content/pkg/FR-2014-08-04/pdf/2014-17694.pdf>
- \_\_\_\_\_. 2016. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the New Mexico Meadow Jumping Mouse; Final Rule. Department of the Interior, Service. 81 FR 51: 14264-14325. March 16, 2016. Available online: <https://www.govinfo.gov/content/pkg/FR-2016-03-16/pdf/2016-05912.pdf>

**Table B-2. Federally Designated Critical Habitat that Occurs within the Plan Area for the Renewable (Wind and Solar) Energy, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Critical Habitat Notes
_____			. 2020a. Endangered and Threatened Wildlife and Plants; Endangered Species Status for the Peppercorn Chub and Designation of Critical Habitat; Proposed Rule. Department of the Interior, Service. 85 FR 231: 77108-77138. December 1, 2020. Available online: <a href="https://www.govinfo.gov/content/pkg/FR-2020-12-01/pdf/2020-25257.pdf">https://www.govinfo.gov/content/pkg/FR-2020-12-01/pdf/2020-25257.pdf</a>
_____			. 2020b. Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Wright’s Marsh Thistle ( <i>Cirsium wrightii</i> ) With a 4(d) Rule and Designation of Critical Habitat; Proposed Rule. Department of the Interior, Service. 85 FR 189: 61460-61498. September 29, 2020. Available online: <a href="https://www.govinfo.gov/content/pkg/FR-2020-09-29/pdf/2020-19337.pdf">https://www.govinfo.gov/content/pkg/FR-2020-09-29/pdf/2020-19337.pdf</a>
_____			. 2021a. Endangered and Threatened Wildlife and Plants; Designating Texas Hornshell Critical Habitat; Proposed Rule. Department of the Interior, Service. 86 FR 110: 30888-30909. June 10, 2021. Available online: <a href="https://www.govinfo.gov/content/pkg/FR-2021-06-10/pdf/2021-11966.pdf">https://www.govinfo.gov/content/pkg/FR-2021-06-10/pdf/2021-11966.pdf</a>
_____			. 2021b. IPaC. Service Environmental Conservation Online System (ECOS). Accessed July 2021. Available online: <a href="http://ecos.fws.gov/ipac/">http://ecos.fws.gov/ipac/</a>

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
<b>Mammals</b>			
Black Bear <sup>1</sup> <i>Ursus americanus</i>	NL	ST – TX	Forests and forested wetlands, especially mixed deciduous-coniferous forest with a dense understory. When inactive, lives in dens underground, or on ground level under fallen trees or other cover. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Black-footed Ferret <sup>2</sup> <i>Mustela nigripes</i>	FE	SE – CO, KS	Limited to open habitat such as semi-arid grasslands, steppe, and shrub steppe. Black-footed ferrets are limited by prairie dog ( <i>Cynomys</i> spp.) occurrence, as the species depends on prairie dogs for food and prairie dog burrows for shelter (Service 2013).
Canada Lynx <sup>1</sup> <i>Lynx canadensis</i>	FT	SE – CO	Prefers moist, boreal forest with cold, snowy winters and a high density of snowshoe hares ( <i>Lepus americanus</i> ) as the main prey base (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Eastern Spotted Skunk <i>Spilogale putorius</i>	NL	ST – KS	Has a large range across central and eastern North America. Lives in riparian, woodland, grassland/herbaceous, and forested areas, especially in covered areas, but also in brushy/open areas. May live in a burrow, under brush, in a rock crevice, hollow tree, or in an otherwise protected area (NatureServe 2020).
Gray Wolf <sup>2,3</sup> <i>Canis lupus</i>	NL	SE – CO, TX	Mixed or conifer forests, hardwood and conifer woodlands, desert, grassland/herbaceous areas, and alpine areas with no specific habitat preferences (NatureServe 2020).
Least Shrew <i>Cryptotis parva</i>	NL	ST – NM	Mixed, hardwood woodlands, shrubland/chaparral areas, and grassland/herbaceous areas. Lives in dense herbaceous vegetation, brushy areas, forest edges, and salt and freshwater marshes. Nests underground, under logs, stumps, or rocks. (NatureServe 2020).
New Mexico Meadow Jumping Mouse* <sup>2</sup> <i>Zapus hudsonius luteus</i>	FE	SE – NM	Riparian communities and adjacent uplands in grassland and shrub-scrub habitats with tall, emergent herbaceous forbs and sedges (Service 2014).
Pacific Marten <sup>1</sup> <i>Martes caurina</i>	NL	ST – NM	Old growth deciduous, mixed, or coniferous upland and lowland forest (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
Palo Duro Mouse <sup>1</sup> <i>Peromyscus truei comanche</i>	NL	ST – TX	Endemic to Texas. Lives in conifer woodlands including pinyon-juniper ( <i>Pinus</i> spp.- <i>Juniperus</i> spp.) woodlands, chaparral and desert scrub areas, redwood forests, riparian woodlands, and along rocky areas such as limestone cliffs. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Penasco Least Chipmunk** <sup>2</sup> <i>Tamias minimus atristriatus</i>	FC	SE – NM	Subalpine Thurber's fescue ( <i>Festuca thurberi</i> ) meadow with deciduous shrubs or upper montane coniferous forest (Frey and McKibben 2018).
Preble's Meadow Jumping Mouse <sup>2</sup> <i>Zapus hudsonius preblei</i>	FT	ST – CO	Dense, herbaceous riparian habitat and adjacent upland grasslands (Service 2018).
Spotted Bat <i>Euderma maculatum</i>	NL	ST – NM, TX	Conifer woodland, desert, shrubland/chaparral, grassland/herbaceous, cliff, bare rock/talus/scree areas. Specifically, they live in desert to montane coniferous stands, and forage in open habitat such as meadows and wetlands. Roosts occur in cracks and crevices in cliffs. Not much is known about winter habitats. (NatureServe 2020).
Texas Kangaroo Rat <i>Dipodomys elator</i>	NL	ST – TX	Endemic to Oklahoma and Texas. Lives in sparsely vegetated areas, including areas that have been disturbed through grazing, and along fencerows near cultivated areas and roads. In Texas, they live in areas with short, sparse grasses that have overhead woody cover. Burrows are in bare ground areas, and areas with short vegetation. Some individuals may use more than one burrow, and young are born in underground nest chambers. (NatureServe 2020).
White-nosed Coati <i>Nasua narica</i>	NL	ST – TX	Cropland/hedgerow, hardwood, mixed, and conifer woodlands, mixed, hardwood, and conifer forests, and shrubland/chaparral areas. The white-nosed coati lives in oak-sycamore-walnut ( <i>Quercus</i> spp.- <i>Platanus</i> spp.- <i>Jugulans</i> spp.), oak-pine, and shrub-grass canyons, near water. Dens are in crevices under tree roots, in caves, mines, or hollow trees. (NatureServe 2020).
<b>Birds</b>			
Baird's Sparrow*** <i>Ammodramus bairdii</i>	NL	ST – NM	Nests in mixed-grass prairie, tallgrass prairie, wet meadows, and some disturbed habitat. In prairies, the Baird's sparrow is commonly associated with blue grama ( <i>Bouteloua gracilis</i> ), western wheatgrass ( <i>Pascopyrum smithii</i> ), little bluestem ( <i>Schizachyrium scoparium</i> ), prairie junegrass ( <i>Koeleria macrantha</i> ), needle and thread ( <i>Hesperostipa comata</i> ), and needleleaf sedge ( <i>Carex duriuscula</i> ). Tends to prefer dense, medium-tall vegetation. (NatureServe 2020).

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
Bald Eagle <i>Haliaeetus leucocephalus</i>	NL	ST – NM	Nest in forested areas near water, and avoid heavily developed areas. May feed in areas near humans, such as fish processing plants, dumps, and dams where fish are plenty. Perches in tall, mature, coniferous or deciduous trees. In winter, bald eagles may be seen in dry, open uplands near water for fishing. (All About Birds 2020).
Bell's Vireo <i>Vireo bellii</i>	NL	ST – NM	Arid regions along streams or in dry arroyos and gulches, especially in shorter vegetation including dense shrub or scrub areas including brushy fields, riverine scrub, coastal chaparral, scrub oak, mottes of shrubs and trees in prairies, saltcedar ( <i>Tamarisk</i> spp.) stands, and mesquite ( <i>Prosopis</i> spp.) bosques. Tend to live in low vegetation. (All About Birds 2020).
Boreal Owl <sup>1</sup> <i>Aegolius funereus</i>	NL	ST – NM	Dense coniferous or mixed forest near open grasslands (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Broad-billed Hummingbird <i>Cynanthus latirostris</i>	NL	ST – NM	Arid scrub, semi-desert, or other open arid habitats with scattered small trees and shrubs (NatureServe 2020).
Brown Pelican <sup>1</sup> <i>Pelecanus occidentalis</i>	NL	SE – NM	Coastal waters, shallow estuarine waters, sand pits, coastal islands, and offshore sandbars (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Burrowing Owl <i>Athene cunicularia</i>	NL	SE – CO	Open grasslands (prairie, plains, savanna), sometimes vacant lots or airports. This owl spends much time on the ground or on low perches. Nests are in abandoned burrows. This species is associated with prairie dog colonies.
Common Black Hawk <sup>†1</sup> <i>Buteogallus anthracinus</i>	NL	ST – NM, TX	Woodlands near water for hunting, especially found in cottonwood stands (eBird 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Common Ground Dove <i>Columbina passerina</i>	NL	SE – NM	Open or shrubby areas that have tall grasses or tree stands, especially in riparian areas, open savannas, and towns (eBird 2020).
Eastern Black Rail <sup>††2,3</sup> <i>Laterallus jamaicensis</i> spp. <i>jamaicensis</i>	FT	Proposed – TX	Wetland-dependent species inhabiting palustrine and estuarine wetlands, such as wet grasslands and emergent marshes. Wetlands can be of varying salinity, but the species has a preference for emergent wetlands with dense, persistent, overhead herbaceous cover (Service 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
Golden-cheeked Warbler <sup>1,2</sup> <i>Dendroica chrysoparia</i>	FE	SE – TX	Mature, closed canopy Ashe juniper ( <i>Juniperus ashei</i> ) woodlands (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Gray Hawk <sup>1</sup> <i>Buteo plagiatus</i>	NL	ST – TX	Shrubby riparian woodland, gallery forest, tropical deciduous forest, and tropical lowland evergreen forest edge; usually occurs alone (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Gray Vireo <i>Vireo vicinior</i>	NL	ST – NM	Desert, hardwood, conifer, and mixed woodland, and shrubland/chaparral areas, specifically in semi-arid, shrubby areas. Habitat when breeding is similar to during migration and winter. (Nature Serve 2020).
Interior Least Tern <sup>†††1</sup> <i>Sterna antillarum athalassos</i>	NL	SE – CO, KS, NM, TX	Barren to sparsely vegetated riverine sandbars, sand and gravel pits, lake and reservoir shorelines (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Lucifer Hummingbird <i>Calothorax lucifer</i>	NL	ST – NM	Open, arid landscapes including shrub/scrub and woodland edges (NatureServe 2020).
Mexican Spotted Owl <sup>1,2</sup> <i>Strix occidentalis lucida</i>	FT	ST – CO, TX	Spotted owls are residents of old-growth or mature forests that possess complex structural components (uneven aged stands, high canopy closure, multi-storied levels, high tree density; NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Neotropic Cormorant <sup>1</sup> <i>Phalacrocorax brasilianus</i>	NL	ST – NM	Rivers, lakes, marshes, and coastal areas (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Northern Aplomado Falcon <sup>‡2</sup> <i>Falco femoralis septentrionalis</i>	FE, EXPN	SE – NM	Grassy plains and valleys including savannas, desert grasslands and old fields (NatureServe 2020).
Northern Beardless-tyrannulet <i>Camptostoma imberbe</i>	NL	SE – NM	Arid scrub, thickets, mesquite, forest edge, and open riparian woodland, and often near streams in sycamore, mesquite, and cottonwood ( <i>Populus</i> spp.) groves This species nests in trees, often near water in globular clumps among mistletoe ( <i>Phoradendron</i> spp.), and may nest at base of palmetto ( <i>Sabal</i> spp.) fans (NatureServe 2020).

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
Peregrine Falcon <sup>††</sup> <i>Falco peregrinus anatum</i>	NL	ST – NM, TX	Tundra, moorlands, steppe, and seacoasts, where there are cliffs, mountains, open forested areas, and areas where humans congregate. Occurs near farmlands, marshes, lakeshores, river mouths, tidal flats, dunes, beaches, broad river valleys, cities, and airports. Nests are typically on rocky cliffs with overhanging shelters. (NatureServe 2020).
Piping Plover <sup>†††1,2</sup> <i>Charadrius melodus</i>	FT	ST – CO, KS, NM, TX	Shorelines around small alkaline lakes, river islands and adjacent sand pits, reservoir beaches, beaches surrounding large lakes, and pond shorelines (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Reddish Egret <sup>1</sup> <i>Egretta rufescens</i>	NL	ST – TX	Found near coastlines on shallow saltmarshes and mudflats (eBird 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Red Knot <sup>1</sup> <i>Calidris canutus rufa</i>	FT	ST – TX	Breeding habitats are elevated and sparsely vegetated ridges or slopes. They are often adjacent to wetlands and lake edges for feeding. Wintering and migration habitats are often muddy or sandy coastal areas, such as the mouths of bays and estuaries, and tidal flats (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Snowy Plover <sup>1</sup> <i>Charadrius alexandrinus</i>	NL	ST – KS	Along the coast, on sandy beaches, dry mudflats, and at salt ponds. Sometimes inland, but often near water. (eBird 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Southwestern Willow Flycatcher <sup>2</sup> <i>Empidonax traillii extimus</i>	FE	SE – CO, NM, TX	Dense, forested riparian habitats are required for nesting; however, migration and foraging habitat includes old field, shrubland/chaparral, and mixed hardwood forest (NatureServe 2020).
Thick-billed Kingbird <i>Tyrannus crassirostris</i>	NL	SE – NM	Arid scrub/shrub, savannah, riparian woodland, and open habitats with scattered trees (NatureServe 2020).
Tropical Parula <sup>1</sup> <i>Parula pitiayumi</i>	NL	ST – TX	In Texas, lives in deciduous riparian forests dominated by cedar elm ( <i>Ulmus crassifolia</i> ), sugar hackberry ( <i>Celtis laevigata</i> ), Texas ebony ( <i>Ebenopsis ebano</i> ), and Mexican ash ( <i>Fraxinus berlandieriana</i> ), usually near lagoons or dry river beds. The tropical parula is especially found at the tops of trees. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

<b>Species Name</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Habitat/Notes<sup>1</sup></b>
Varied Bunting <i>Passerina versicolor</i>	NL	ST – NM	Open and arid thorn brush, thickets, and scrub habitats (NatureServe 2020).
White-eared Hummingbird <i>Basilinna leucotis</i>	NL	ST – NM	Open scrub/shrub habitat, pine woods, pine-oak forests, forest edge, and fir forest (NatureServe 2020).
White-faced Ibis <sup>1</sup> <i>Plegadis chihi</i>	NL	ST – TX	Freshwater including marshes, swamps, ponds, and rivers; nests are in marshes, low trees, or on the ground in vegetation (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
White-tailed Ptarmigan <sup>1</sup> <i>Lagopus leucura</i>	NL	SE – NM	Alpine tundra with rocky areas and sparse vegetation (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Whooping Crane <sup>2</sup> <i>Grus americana</i>	FE, EXPN	SE – CO, KS, NM, TX	Coastal marshes and estuaries, inland marshes, lakes, ponds, riparian areas, wet meadows and rivers, and agricultural fields (NatureServe 2020).
Zone-tailed Hawk <i>Buteo albonotatus</i>	NL	ST – TX	Hunts in desert scrub and grasslands and uses riparian areas with cottonwood and willow trees for nesting and hunting. May live in arid foothills and rocky canyons and cliffs, and forage up to 7,600 feet in pine forests. (All About Birds 2020)
<b>Amphibians</b>			
Green Toad <i>Anaxyrus debilis</i>	NL	ST – KS	May live in a variety of aquatic and terrestrial habitats. Terrestrial habitat may include arid and semiarid plains, valleys, and foothills in grassland and desert shrublands, and may burrow in soil and stay under rocks when inactive. Eggs and larvae are in shallow water of temporary ponds, rain pools, and pools along intermittent streams. (NatureServe 2020)
Sacramento Mountain Salamander <sup>1</sup> <i>Aneides hardii</i>	NL	ST – NM	Douglas-fir, Engelmann spruce, and white fir forests on north- and east-facing slopes (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Strecker's Chorus Frog <i>Pseudacris streckeri</i>	NL	ST – KS	Mainly lives in terrestrial habitats including moist woods, sand prairies, ravines, along streams and swamps, near ponds, and cultivated areas. When inactive, burrows underground. Eggs and larvae grow in flooded fields, ditches, sloughs, small ponds, and other temporary waterbodies. (NatureServe 2020)

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

<b>Species Name</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Habitat/Notes<sup>1</sup></b>
Western Narrow-mouthed Toad <i>Gastrophryne olivacea</i>	NL	SE – NM	Arid and semi-arid lowlands including mesquite and shrublands, including grasslands, rocky wooded hills, marsh edges, near springs, rain pools, river floodplains, and cultivated fields. When inactive, hides in rotten logs, stumps, or borrows. Eggs and larvae develop in temporary pools. (NatureServe 2020).
<b>Reptiles</b>			
Arid Land Ribbonsnake <sup>1</sup> <i>Thamnophis proximus</i>	NL	ST – NM	Riparian habitats, lakes, rivers, wetlands, and streams (New Mexico Natural Heritage Program 2017). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Checkered Garter Snake <i>Thamnophis marcianus</i>	NL	ST – KS	Lives in a variety of aquatic or terrestrial lowland habitats. In northern Texas, occurs near ponds, springs, streams, rivers, marshes, swamps, flooded areas, and irrigation ditches. In southern Texas, occurs in grasslands, deserts, thornbrush savanna, backyards, and gardens. In the southern range, habitat included tropical wet, moist, and dry forest and pine-palmetto savanna. (NatureServe 2020).
Dunes Sagebrush Lizard <sup>1</sup> <i>Sceloporus arenicolus</i>	NL	SE – NM	Occurs in New Mexico and Texas, near active and semi-stabilized sand dunes, lives in burrows or under leaf debris (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Gray-banded Kingsnake <i>Lampropeltis alterna</i>	NL	SE – NM	Lives in New Mexico and Texas, in riparian, bare rock/talus/scree, desert, and shrubland/chaparral habitats. Habitat is usually dry and rocky, with typical Chihuahuan Desert plants including acacia, desert willow, creosotebush, mesquite, ocotillo, and opuntia. During the day, the snake is in crevices or under cover. (NatureServe 2020).
Mottled Rock Rattlesnake <i>Crotalus lepidus lepidus</i>	NL	ST – NM	In New Mexico, lives in arid and semi-arid rocky mountainous areas, especially those including pine-oak, oak-juniper, pinyon pine, ponderosa pine, and agave. Also lives in mesquite grasslands and rocky desert flats and canyons. (IUCN 2020a).
New Mexico Threadsnake <i>Rena dissecta</i>	NL	ST – KS	Terrestrial habitats including forest/woodland, mixed, hardwood, and conifer woodland, desert, and grassland/herbaceous areas. Specifically, habitat includes prairies, prairie canyons, rocky and sandy deserts, and pinyon-juniper and juniper-oak woodland. The New Mexico threadsnake lives in damp, loose soil, and may be found under rocks, logs, and debris. They lay eggs in underground chambers, in hollows of decaying trees, or in rocky fissures. (NatureServe 2020).

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

<b>Species Name</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Habitat/Notes<sup>1</sup></b>
Plain-bellied Water Snake <sup>1</sup> <i>Nerodia erythrogaster</i>	NL	SE – NM	Aquatic and wetland habitats with permanent or semi-permanent water (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Texas Horned Lizard <i>Phrynosoma cornutum</i>	NL	ST – TX	Lives in a variety of open areas in arid and semiarid regions with sparse vegetation, such as deserts, prairies, playa edges, bajadas, dunes and foothills, in areas that contain vegetation such as grass, cactus, scattered brush, and shrubby trees. Soil can be sandy to rocky. When inactive, may burrow underground, in rodent burrows, or stay under rocks. The Texas horned lizard lays eggs in soil or under rocks. (NatureServe 2020).
Texas Tortoise <i>Gopherus berlandieri</i>	NL	ST – TX	Lives in Texas in savanna, grassland/herbaceous, shrubland/chaparral, and hardwood habitats, specifically in open scrub woods, arid brush, grass-cactus areas, and areas with sandy well-drained soil. When inactive, lives in shallow depressions at the base of bushes or cactuses, but may also create an underground burrow or hide under objects. The Texas tortoise lays eggs in nests dug in soil near or under bushes, and may use the same location for multiple years. (NatureServe 2020).
Trans-Pecos Black-headed Snake <i>Tantilla cucullata</i>	NL	ST – TX	Endemic to Texas. Lives in grassland/herbaceous, bare rock/talus/scree, desert, and mixed woodland habitat, specifically steep-sides rocky canyons with pinyon pine, oak, and juniper, hilly grasslands with juniper and cholla, streamside woodland areas vegetated by creosote-bush, acacia, yucca, and grasses, and low hills of arid grasslands vegetated by creosote-bush, yucca, ocotillo, and agave. The trans-Pecos black-headed snake usually lives under cover, underground, or in crevices, and may move on the ground surface during summer in moist weather. (NatureServe 2020).
Western River Cooter <sup>1</sup> <i>Pseudemys gorzugi</i>	NL	ST – NM	Lives in New Mexico and Texas in rivers, permanent tributary streams, large and deep stream pools with clear water and sandy or rocky bottoms. The water may or may not contain aquatic vegetation. The western river cooter basks on logs, in overhanging vegetation, or muddy banks, near the water. Eggs are buried in soil near the water. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
<b>Fish</b>			
Arkansas Darter <sup>1</sup> <i>Etheostoma cragini</i>	NL	ST – CO	Spring-fed headwaters and cool, shallow, slow-moving creeks, especially those with herbaceous aquatic vegetation. The Arkansas darter lays eggs in gravel bottoms. (NatureServe 2020)  This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Arkansas River Shiner <sup>1,2</sup> <i>Notropis girardi</i>	FT	SE – KS, NM ST – TX	Wide, shallow, unshaded creeks and small to large rivers, especially those with silt and sand substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Bigscale Logperch <sup>1</sup> <i>Percina macrolepida</i>	NL	ST – NM	Small to medium rivers with moderate to fast-flowing waters (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Blue Sucker <sup>1</sup> <i>Cycleptus elongatus</i>	NL	SE – NM ST - TX	Large rivers and parts of major tributaries, channels and flowing pools with moderate water flow. Especially occurs in water with cobble and bedrock substrate. (NatureServe 2020)  This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Brassy Minnow <sup>1</sup> <i>Hybognathus hankinsoni</i>	NL	ST – CO	Small, clear creeks and small rivers with sand, gravel, or mud substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Chub Shiner <sup>1</sup> <i>Notropis potteri</i>	NL	ST – TX	Small to large runs and rivers with sand, gravel, or silt substrate. The chub shiner is a bottom dweller. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Comanche Springs Pupfish <sup>1,2</sup> <i>Cyprinodon elegans</i>	FE	SE – TX	Freshwater springs, marshes, and canals with mud substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Common Shiner <sup>1</sup> <i>Luxilus cornutus</i>	NL	ST – CO	Creeks, small to medium rivers, pools, lakes, and reservoirs with moderate to fast-flowing water and gravel to rubble substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

<b>Species Name</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Habitat/Notes<sup>1</sup></b>
Conchos Pupfish <sup>1</sup> <i>Cyprinodon eximius</i>	NL	ST – TX	Sloughs, backwaters, marshes, margins of large streams, and creek mouths tributary to large rivers (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Devils River Minnow <sup>1,2</sup> <i>Dionda diaboli</i>	FT	ST – TX	Endemic to Texas. Fast-flowing, clear, spring-fed water with gravel substrate. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Flathead Chub <sup>1</sup> <i>Platygobio gracilis</i>	NL	ST – KS	Main channels of small to large rivers, shallow to deep water with a moderate to fast current and mud, rock, or sand substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Gray Redhorse <sup>1</sup> <i>Moxostoma congestum</i>	NL	SE – NM	Warm and clear small to medium rivers with slow-moving water or lakes and rock, gravel, sand, or silt substrate. Typically avoids areas with dense vegetation. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Greenback Cutthroat Trout <sup>1</sup> <i>Oncorhynchus clarkii stomias</i>	FT	ST – CO	Mountain streams with fast-flowing water and lakes with overhanging banks or vegetation cover (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Greenthroat Darter <sup>1</sup> <i>Etheostoma lepidum</i>	NL	ST – NM	Gravel and rubble riffles of headwaters, creeks, and small rivers, and swift-flowing springs. Especially in waters with vegetation. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Headwater Catfish <sup>1</sup> <i>Ictalurus lupus</i>	NL	ST – TX	Riffles, runs, and pools of creeks, small rivers, and streams, with clear, temperate waters (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Lake Chub <i>Couesius plumbeus</i>	NL	SE – CO	Occurs in varied habitats in both standing and flowing water, and large and small bodies of water. Most common in gravel-bottomed pools and runs of streams and along rocky lake margins. Spawning occurs in river shallows, along rocky shores, in shoals of lakes (NatureServe 2020).

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

<b>Species Name</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Habitat/Notes<sup>1</sup></b>
Leon Springs Pupfish <sup>1,2</sup> <i>Cyprinodon bovinus</i>	FE	SE – TX	Endemic to Texas. Shallow saline springs, pools, and outflow springs. Common in outflows from Diamond Y Spring. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Mexican Blindcat (catfish) <sup>1,2</sup> <i>Prietella phreatophila</i>	FE	SE – TX	Subterranean waters in wells, mine shafts, and caves with silt substrate (IUCN 2020b). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Mexican Tetra <sup>1</sup> <i>Astyanax mexicanus</i>	NL	ST – NM	Streams and rivers, especially in shallow water with overhanging bank vegetation as cover and rock or sand substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Northern Redbelly Dace <sup>1</sup> <i>Phoxinus eos</i>	NL	SE – CO	Boggy lakes, ponds, and pools of headwaters and creeks, especially with aquatic vegetation (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Pallid Sturgeon <sup>1,2</sup> <i>Scaphirhynchus albus</i>	FE	SE – KS	Turbid riverine waters, strong currents with gravel or sand substrate. Sometimes occurs in reservoirs. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Pecos Bluntnose Shiner <sup>1,2</sup> <i>Notropis simus pecosensis</i>	FT	SE – NM	Main river channels with large flows and sand, gravel, or silt substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Pecos Gambusia <sup>1,2</sup> <i>Gambusia nobilis</i>	FE	SE – NM, TX	Clear spring waters high in calcium carbonate, waters with fairly constant temperature and vegetation (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Pecos Pupfish <sup>1</sup> <i>Cyprinodon pecosensis</i>	NL	ST – NM, TX	Springs, gypsum sinkholes, and desert streams with gravel substrate and highly saline habitats (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
Peppered Chub <sup>1</sup> <i>Macrhybopsis tetranema</i>	PE	SE – KS ST – NM, TX	Large, permanently flowing streams with clean, fine sand substrates (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Plains Minnow <sup>1</sup> <i>Hybognathus placitus</i>	NL	SE – CO ST - KS	Shallow runs, pools of creeks, and small to medium sized rivers with slow water and sand or silt substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Prairie Chub <sup>1</sup> <i>Macrhybopsis australis</i>	NL	ST – TX	Creeks and small to large rivers with sand and gravel substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Proserpine Shiner <sup>1</sup> <i>Cyprinella proserpina</i>	NL	ST – TX	Creek pools, streams, and small rivers with rock, sand, or gravel substrate and aquatic vegetation (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Red River Pupfish <sup>1</sup> <i>Cyprinodon rubrofluviatilis</i>	NL	ST – TX	Pools and runs of headwaters, creeks, and small to medium rivers with shallow water and sand substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Rio Grande Darter <sup>1</sup> <i>Etheostoma grahami</i>	NL	ST – TX	Pools of creeks, small rivers, and rocky riffles, common in the Rio Grande downstream for the Amistad Reservoir with cobble substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Rio Grande Shiner <sup>1</sup> <i>Notropis jemezianus</i>	NL	ST – TX	Runs and flowing pools of rivers and creeks with rubble, gravel, sand, or silt substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Rio Grande Silvery Minnow <sup>1,2</sup> <i>Hybognathus amarus</i>	EXPN	SE – NM, TX	Pools and backwaters of creeks and small to large rivers with slow to moderate flowing waters associated with the Rio Grande River. Typically occurs in shallow water with silt substrate. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
Roundnose Minnow <sup>1</sup> <i>Dionda episcopa</i>	NL	ST – TX	Rocky pools of headwaters, creeks, and small rivers, commonly associated with filamentous algae (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Sharptnose Shiner <sup>1,2</sup> <i>Notropis oxyrhynchus</i>	FE	SE – TX	Endemic to Texas. Medium to large rivers or pools with sand, gravel, or mud substrate and shallow water. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Shovelnose Sturgeon <sup>1</sup> <i>Scaphirhynchus platyrhynchus</i>	NL	ST – TX	Large river channels with strong current and sand, gravel, or mud substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Silver Chub <sup>1</sup> <i>Macrhybopsis storeriana</i>	NL	SE – KS	Pools and backwaters of small to large rivers and lakes and sand, silt, or gravel substrate. Especially in shallow waters. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Smalleye Shiner <sup>1,2</sup> <i>Notropis buccula</i>	FE	SE – TX	Endemic to Texas. Small to medium river channels with shallow water and sand substrate. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Southern Redbelly Dace <sup>§1</sup> <i>Phoxinus erythrogaster</i>	NL	SE – CO, NM	Headwaters and creeks with clear water and gravel, rubble, or sand substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Speckled Chub <sup>1</sup> <i>Macrhybopsis aestivalis</i>	NL	ST – TX	Small to large river runs with sand to gravel substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Spottfin Gambusia <sup>1</sup> <i>Gambusia krumholzi</i>	NL	ST – TX	Densely vegetated margins of quiet creek pools associated with areas of swift flowing water (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

<b>Species Name</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Habitat/Notes<sup>1</sup></b>
Suckermouth Minnow <sup>1</sup> <i>Phenacobius mirabilis</i>	NL	SE – CO ST – NM	Runs and riffles of creeks and small to large rivers with sand, gravel, or boulder substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Tamaulipas Shiner <sup>1</sup> <i>Notropis braytoni</i>	NL	ST – TX	River or creek channels with rubble, gravel, sand, and silt substrate and little to no vegetation (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Topeka Shiner <sup>1,2</sup> <i>Notropis topeka</i>	FE	ST – KS	Open, permanent pools of small, clear headwaters and creeks (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
White Sands Pupfish <sup>1</sup> <i>Cyprinodon tularosa</i>	NL	ST – NM	Endemic to New Mexico. Streams, marshes, and springheads with clear and shallow waters with various substrate such as gravel, sand, silt, or mud. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
<b>Invertebrates</b>			
American Burying Beetle <sup>2,3</sup> <i>Nicrophorus americanus</i>	FT, EXPN	SE – KS	Occurs in a variety of habitats, such as grassland, shrubland, and hardwood forests. May occur in areas with mowed or grazed fields to dense shrub areas. Adults typically live aboveground, but may overwinter in soil and lay eggs in soil next to buried carcasses. (NatureServe 2020).
Carolinae Tryonia <sup>1</sup> <i>Tryonia oasiensis</i>	NL	ST – TX	Endemic to silt-substrate ponds in the Pecos River Basin area and parts of the Chihuahuan Desert (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Caroline's Springs Pyrg <sup>1</sup> <i>Pyrgulopsis ignota</i>	NL	ST – TX	Endemic to Texas. Lives in lakes, ponds, and streams, and especially found on cobbles in ponds. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Crowned Cave Snail <sup>1</sup> <i>Phreatodrobia coronae</i>	NL	ST – TX	Intermittent streams and ponds, sometimes in subterranean waters (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

<b>Species Name</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Habitat/Notes<sup>1</sup></b>
Cylindrical Papershell Mussel <sup>1</sup> <i>Anodontoides ferussacianus</i>	NL	SE – KS	Lives in shallow water, near shores. May live in streams, creeks, or lakes, on sandy gravel. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Diamond Tryonia <sup>1,2</sup> <i>Pseudotryonia adamantina</i>	FE	SE – TX	Endemic to Texas. Lives near small springs, seeps, and marshes, and flowing water. Especially near cattail and sedge-dominated wetlands. Typically lives on muddy substrates. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Diminutive Amphipod <sup>1,2</sup> <i>Gammarus hyalleloides</i>	FE	SE – TX	Endemic to Texas. Lives on rocky or gravel substrate in warm, mineralized, flowing spring water originating from caves. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Gonzales Tryonia <sup>1,2</sup> <i>Tryonia circumstriata</i>	FE	SE – TX	Endemic to Texas. Lives in springs, seeps, and marshes near sedges and cattails, especially on mud substrates. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Koster's Springsnail <sup>1,2</sup> <i>Juturnia kosteri</i>	FE	SE – NM	Endemic to New Mexico. Lives in springs with slow to moderate flowing water, typically on silt, sand, or gravel compacted substrate. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Lake Fingernailclam <sup>1</sup> <i>Musculium lacustre</i>	NL	ST – NM	Lives in a variety of waters: lakes, ponds, ditches, swamps, marshes, puddles, rivers, and creeks, especially those with muddy substrate, but sometimes on sand or gravel substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Long Fingernailclam <sup>1</sup> <i>Musculium transversum</i>	NL	ST – NM	Lakes and rivers, no substrate preference – may occur on sand, mud, or rocky substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
Mexican Fawnsfoot <sup>1</sup> <i>Truncilla cognata</i>	NL	ST – TX	Lives in Texas. Habitat preferences are mostly unknown. The Mexican fawnsfoot may prefer streams and rivers with sand or gravel substrate. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Noel's Amphipod <sup>1,2</sup> <i>Gammarus desperatus</i>	FE	SE – NM	Endemic to New Mexico. Lives in warm, mineralized water. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Ovate Vertigo Snail <i>Vertigo ovata</i>	NL	ST – NM	Grass litter and on cattails near swamps, sedge meadows, wet and mesic prairie, meadows, riverbanks, lakeshores, roadside ditches, wooded wetlands, upland forest, grassland, and bedrock outcrops (NatureServe 2020).
Paper Pondshell <sup>1</sup> <i>Utterbackia imbecillis</i>	NL	SE – NM	Mud or sandy substrates of reservoirs, especially found in artificial waters (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Pecos Amphipod <sup>1,2</sup> <i>Gammarus pecos</i>	FE	SE – TX	Springs or brooks near the Pecos River (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Pecos Assimineea Snail <sup>1,2</sup> <i>Assimineea pecos</i>	FE	SE – NM, TX	Aquifer-fed spring systems in desert grasslands of the Pecos River basin. Typically found in moist areas near flowing water, under vegetation such as grasses or sedges. (NatureServe 2020) This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Pecos Springsnail <sup>1</sup> <i>Pyrgulopsis pecosensis</i>	NL	ST – NM	Endemic to New Mexico. Lives on pebbles, silt, and sometimes on vegetation underwater. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Phantom Springsnail <sup>1,2</sup> <i>Pyrgulopsis texana</i>	FE	SE – TX	Endemic to Texas. Lives in mineralized spring water near caves, especially in shallow water. Lives near the sources of three springs and is found on hard substrates. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Phantom Tryonia <sup>1,2</sup> <i>Tryonia cheatumi</i>	FE	SE – TX	Endemic to Texas. Lives in springs, namely the Phantom Lake Spring and associated waters, especially on mud or gravel substrates. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
Roswell Springsnail <sup>1,2</sup> <i>Pyrgulopsis roswellensis</i>	FE	SE – NM	Endemic to New Mexico. Lives on pebbles and silt, and sometimes on mud or vegetation underwater. Typically in spring heads and runs with slow to moderate flowing water. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Salina Mucket <sup>1</sup> <i>Potamilus metnecktayi</i>	NL	ST – TX	Presumed extinct in New Mexico, but still assumed to live in Texas although no living specimens have been found in more than 20 years. Habitat includes small to moderate sized streams and rivers. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Scott Optioservus Riffle Beetle <sup>1</sup> <i>Optioservus phaeus</i>	NL	SE – KS	Rock substrates near roots, and in riffle areas with flowing water in the form of clear, cool streams with rocky substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Star Gyro <sup>1</sup> <i>Gyraulus crista</i>	NL	ST – NM	Intermittent or permanent streams and ponds, with standing or flowing water (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Swamp Fingernailclam <sup>1</sup> <i>Musculium partumeium</i>	NL	ST – NM	Ponds, swamps, small lakes, and river eddies in mud substrates and organic detritus; sometimes found near rooted vegetation. Typically in shallow water. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Texas Hornshell <sup>1,2,3</sup> <i>Popenaias popeii</i>	FE	SE – NM, TX	In water at riverbanks, crevices and shelves near boulders, especially in sand and cobble substrate (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Texas Pimpleback <sup>1,2,3</sup> <i>Quadrula petrina</i>	FC	ST – TX	Endemic to Texas. Lives in shallow slow to moderate flowing water, in mud, sand, gravel, and cobble substrate. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

<b>Species Name</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Habitat/Notes<sup>1</sup></b>
Wrinkled Marshsnail <sup>1</sup> <i>Stagnicola caperata</i>	NL	SE – NM	Ditches, shallow or vernal pools, spring-flooded margins of permanent water areas, and sometimes in lakes, rivers, and swamps (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
<b>Flowering Plants</b>			
Allred's Flax <i>Linum allredii</i>	NL	SE – NM	Exposed hillsides and scarps of gypsum in the Chihuahuan Desert, 1,280 meters (m; 3,900 feet [ft]) in elevation (Natural Heritage New Mexico [NHNM] 1999, New Mexico State Forestry Division [NMSFD] 2021)
Bunched Cory Cactus <sup>ss2</sup> <i>Coryphantha ramillosa</i>	FT	ST – TX	Chihuahuan Desert succulent scrub on rocky slopes, ledges, and gravelly limestone flats (NatureServe 2020).
Dune Umbrella-sedge <sup>1</sup> <i>Cyperus onerosus</i>	NL	ST – TX	Endemic to Texas. Moist to wet sand near sand dunes. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Goodding's Onion <sup>1</sup> <i>Allium gooddingi</i>	NL	SE – NM	Moist, shaded canyon bottoms in conifer forests, with aspen, and open meadows (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Great Plains Lady's Tresses Orchid <i>Spiranthes magnicamporum</i>	NL	SE – NM	Habitat may vary. Occurs in dry or wet prairies, riverbanks, and floodplains. (NatureServe 2020).
Gypsum Wild-buckwheat <sup>2</sup> <i>Eriogonum gypsophilum</i>	FT	SE – NM	Semi-arid open grassland dominated by grama species and creosote bush ( <i>Larrea tridentata</i> ) communities (NatureServe 2020).
Hess' Fleabane <i>Erigeron hessii</i>	NL	SE – NM	Narrow endemic found only in the Mogollon Mountains in Catron County New Mexico. Found in high-elevation (2,900-3,100 m [9,500-10,200 ft]) subalpine conifer forest to subalpine grassland (NHNM 1999, NatureServe 2020, NMSFD 2021).
Holy Ghost Ipomopsis <sup>1,2</sup> <i>Ipomopsis sancti-spiritus</i>	FE	SE – NM	Forest edge habitat and along roadsides within Santa Fe National Forest (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Kuenzler's Hedgehog Cactus <sup>2</sup> <i>Echinocereus fendleri</i> var. <i>kuenzleri</i>	FT	SE – NM	Grassland and herbaceous habitat on the fringes of pinyon-juniper savannah (NatureServe 2020).

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
Lee's Pincushion Cactus <sup>1,2</sup> <i>Escobaria sneedii</i> var. <i>leei</i>	FT	SE – NM	Restricted to Tansil Limestone Formation on north-facing ledges, slopes, and ridgetops; known populations within Carlsbad Caverns National Park (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Leoncita False Foxglove <sup>1</sup> <i>Agalinis calycina</i>	NL	ST – TX	Marshy ground around springs and other sources of water (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Lloyd's Mariposa Cactus <i>Echinomastus mariposensis</i>	FT	ST – TX	Arid desert and shrubland/chaparral habitats with gravelly, limestone-derived soils on gentle slopes (NatureServe 2020).
Parish's Alkali Grass <i>Puccinellia parishii</i>	NL	SE – NM	Range-wide, this species is found at alkaline springs, seeps, and seasonally wet areas occurring at the heads of drainages or on gentle slopes at 800-2,200 m (2,600-7,200 ft; NHNM 1999, NMSFD 2021)
Pecos Sunflower <sup>1,2</sup> <i>Helianthus paradoxus</i>	FT	SE – NM ST – TX	Requires permanent wetlands and typically lives in wet soils, especially common in the Pecos River basin. Grows in areas dominated by saltgrass and other herbaceous species. (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Scheer's Pincushion Cactus <i>Coryphantha scheeri</i> spp. <i>scheeri</i>	NL	SE – NM	Desert grassland and Chihuahuan desert scrub, in gravelly or silty soils (NatureServe 2020).
Shining Crested Coralroot <sup>1</sup> <i>Hexalectris nitida</i>	NL	SE – NM	Shaded canyons, especially among rocks (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Sneed Pincushion Cactus <sup>2</sup> <i>Escobaria sneedii</i> var. <i>sneedii</i>	FE	SE – TX	Desert and desert grassland habitats with limestone ledges and slopes dominated by creosote bush, yucca species, and grama species (NatureServe 2020).
Texas Poppy-mallow <sup>2</sup> <i>Callirhoe scabriuscula</i>	FE	SE – TX	Grasslands, shin oak shrublands, and mesquite woodlands with deep, loose sandy soil from alluvial deposits of the Colorado River (NatureServe 2020).
Texas Snowbells <sup>1,2</sup> <i>Styrax platanifolius</i> spp. <i>texanus</i>	FE	SE – TX	Limestone cliffs, bluffs, and ledges within riparian habitat and surrounded by sycamore-little walnut, oak, or oak-juniper woodlands (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
Tharp's Bluestar <i>Amsonia tharpii</i>	NL	SE – NM	Shortgrass grasslands or shrublands, in soils that are shallow, well-drained, and limestone-based (NatureServe 2020).
Tobusch Fishhook Cactus <sup>2</sup> <i>Sclerocactus breviamatus</i> ssp. <i>tobuschii</i>	FT	SE – TX	Riparian areas and adjacent shortgrass grasslands and semi-desert shrublands interspersed with oak-juniper woodlands (NatureServe 2020).
Western Prairie Fringed Orchid <sup>1</sup> <i>Platanthera praeclara</i>	FT	ST – CO	Moist to wet calcareous tallgrass prairies and sedge meadows with perennial flooding (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Wood Lily <i>Lilium philadelphicum</i> var. <i>andinum</i>	NL	SE – NM	Prairies and woodlands with open areas (Prairie Moon Nursery 2020).
Wright's Marsh Thistle <sup>1,2</sup> <i>Cirsium wrightii</i>	PT	SE – NM	Marshy wetlands near springs and requires saturated soils and surface/subsurface water flows (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Yellow Lady's Slipper <sup>1</sup> <i>Cypripedium parviflorum</i> var. <i>pubescens</i>	NL	SE – NM	Boggy or swampy areas, damp woods, near rivers, canal banks, wet meadows, and rocky wooded hillsides, in sandy loamy or loamy soils (NatureServe 2020). This species does not occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands, and therefore is unlikely to be impacted by the issuance of an ITP for LEPC.
Zuni Fleabane <i>Erigeron rhizomatus</i>	NL	SE – NM	Clay hillsides with Chinle or Baca formation shale soils and that are nearly barren; most often found north or east-facing slopes in high-elevation (2,200-2,400 m [7,300-8,000 ft ])open pinyon-juniper ( <i>Pinus</i> spp.- <i>Juniperus</i> spp.) woodlands (NHNM 1999, NMSFD 2021).

EXPN = population is experimental non-essential in survival of the overall species, FC = candidate for federal listing, FE = federally endangered, FT = federally threatened, NL = not listed, PE = proposed endangered for federal listing, PT = proposed threatened for federal listing, SE = state endangered, ST = state threatened

ITP = Incidental Take Permit, LEPC = Lesser Prairie-Chicken (*Tympanuchus pallidicinctus*)

<sup>1</sup> State-listed species with the potential to occur within the Plan Area but not expected to occur in similar habitat as the LEPC, shrub-scrub habitat, or cultivated croplands are unlikely to be impacted by the issuance of an ITP for LEPC and have been dismissed from detailed analysis.

<sup>2</sup> State-listed species that are also federally listed are included here if identified through our state-level threatened and endangered species analysis as potentially occurring within the Plan Area.

<sup>3</sup> Identified through our state-level threatened and endangered species analysis as potentially occurring within the Plan Area but not identified through the Information for Planning and Consultation Tool (IPaC; Service 2021).

\* The New Mexico meadow jumping mouse (*Zapus hudsonius luteus*) is synonymous with the New Mexico Department of Game and Fish (NMDGF) meadow jumping mouse (*Zapus lutue luteus*; see Service 2020).

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
--------------	----------------	--------------	----------------------------

- \*\* The NMDGF lists the Penasco least chipmunk as *Neotamius minimus atrisstriatus*, which is synonymous with *Tamias minimus atrisstriatus* (NatureServe 2020).
- \*\*\* The NMDGF lists the Baird’s sparrow as *Centronyx bairdii*, which is synonymous with *Ammodramus bairdii* (NatureServe 2020).
- † The NMDGF lists the subspecies of the common black hawk (*Buteogallus anthracinus anthracinus*). For the purposes of analysis, as other subspecies are not found in the Plan Area (NatureServe 2020), the parent species listed by the Texas Parks and Wildlife Department (TPWD) and the subspecies listed by NMDFG are considered to be the same in the context of this document.
- †† The eastern black rail is listed as “black rail (*Laterallus jamaicensis*)” by the TPWD. The eastern black rail subspecies is the only subspecies found in the Plan Area (see NatureServe 2020), so eastern black rail is synonymous with the Texas black rail in the context of this document.
- ††† The interior least tern is listed as “least tern (*Sterna antillarum*)” by the NMDGF and the Kansas Department of Wildlife and Parks. The interior subspecies is the only subspecies found in the Plan Area for these states (see Service 1985), so interior least tern is synonymous with least tern in the context of this document.
- ‡ The northern Aplomado falcon is listed as “Aplodomo falcon (*Falco femoralis*)” by the NMDGF. The northern subspecies is the only subspecies found in the Plan Area (see Keddy-Hector et al. 2020 for discussion of the subspecies), so northern Aplomado falcon is synonymous with Aplodomo falcon in the context of this document.
- ‡‡ The American peregrine falcon is listed as “peregrine falcon (*Falco peregrinus*)” by the NMDGF. The American subspecies is the only subspecies found in the Plan Area (see White et al. 2020 for discussion of the subspecies), so American peregrine falcon is synonymous with peregrine falcon in the context of this document.
- ‡‡‡ The Colorado Parks and Wildlife Department (CPWD) lists the subspecies of the piping plover (*Charadrius melodus circumcinctus*) as a state-listed threatened species. For the purposes of this analysis, the parent species and subspecies will be considered to be the same.
- § The NMGFD lists the southern redbelly dace as *Chrosomus erythrogaster*, which is synonymous with *Phoxinix erythrogaster* (NatureServe 2020).
- §§ The TPWD lists both the parent species of bunched cory cactus (*Coryphantha ramillosa*) and the subspecies (*Coryphantha ramillosa* spp. *ramillosa*) as threatened species in Texas. As the parent and subspecies have the same status and habitat, they are grouped here for the purposes of analysis in this document.

Status and range sources:

CPWD (Colorado Parks and Wildlife Department). 2020. Assessing Quality Habitat for Priority Wildlife Species in Colorado Wetlands. Available online: [https://cnhp.colostate.edu/download/documents/cwic\\_docs/CPWSpeciesProfiles/CPWProfiles\\_All.pdf](https://cnhp.colostate.edu/download/documents/cwic_docs/CPWSpeciesProfiles/CPWProfiles_All.pdf)

\_\_\_\_\_. 2021a. Species Profiles. CPWD, Denver, Colorado. Accessed July 2021. Available online: <https://cpw.state.co.us/learn/Pages/SpeciesProfiles.aspx>

\_\_\_\_\_. 2021b. Threatened and Endangered List. CPWD, Denver, Colorado. Accessed July 2021. Available online: <https://cpw.state.co.us/learn/Pages/SOC-ThreatenedEndangeredList.aspx>

Colorado Natural Heritage Program. No date. CPWD: Wildlife Species Profiles. Accessed July 2021. Available online: <https://cpw.state.co.us/learn/Pages/SpeciesProfiles.aspx>

KDWP (Kansas Department of Wildlife and Parks). 2021. Threatened and Endangered Wildlife: List of All Kansas Counties. Accessed July 2021. Available online: <https://ksoutdoors.com/Services/Threatened-and-Endangered-Wildlife/List-of-all-Kansas-Counties/>

Keddy-Hector, D. P., P. Pyle, and M. A. Patten. 2020. Aplomado Falcon (*Falco femoralis*), Version 1.0. P. G. Rodewald, ed. In: Birds of the World. Cornell Lab of Ornithology, Ithaca, New York. doi: 10.2173/bow.aplfal.01.

New Mexico State Forestry Division. 2021. The New Mexico Endangered Plant Program. New Mexico Energy, Minerals and Natural Resources Department, Santa Fe, New Mexico. Accessed July 21, 2021. Available online: <http://www.emnrd.state.nm.us/SFD/ForestMgt/EndangeredPlantsByCounty.html>

NHNM (Natural Heritage New Mexico). 1999. New Mexico Rare Plant List. NHNM, University of New Mexico, Albuquerque, New Mexico. Accessed July 21, 2021. Available online: <https://nmrareplants.unm.edu/rarelist.php>

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
			NMDFG (New Mexico Department of Game and Fish). 2021. Biota Information System of New Mexico. NMDGF, Santa Fe, New Mexico. Accessed July 2021. Available online: <a href="https://www.bison-m.org/SuperSearch.aspx#">https://www.bison-m.org/SuperSearch.aspx#</a>
			ONHI (Oklahoma Natural Heritage Inventory). 2021. Federal and State Endangered, Threatened, and Candidate Species in Oklahoma by County. ONHI, Norman, Oklahoma. Accessed July 2021. Available online: <a href="http://www.oknaturalheritage.ou.edu/content/biodiversity-info/endangered-species/index.php">http://www.oknaturalheritage.ou.edu/content/biodiversity-info/endangered-species/index.php</a>
			Service (U.S. Fish and Wildlife Service). 1985. Endangered and Threatened Wildlife and Plants; Interior Population of the Least Tern Determined to be Endangered; Final Rule. 50 Federal Register 102: 21784-21792. May 28, 1985. Available online: <a href="https://ecos.fws.gov/docs/federal_register/fr957.pdf">https://ecos.fws.gov/docs/federal_register/fr957.pdf</a>
			_____. 2020. Species Status Assessment Report for the New Mexico Meadow Jumping Mouse ( <i>Zapus hudsonius luteus</i> ). Service, Albuquerque, New Mexico. January 20, 2020. Available online: <a href="https://www.fws.gov/southwest/es/NewMexico/documents/20200130_NMMJM_Revised_SSA_Report_final.pdf">https://www.fws.gov/southwest/es/NewMexico/documents/20200130_NMMJM_Revised_SSA_Report_final.pdf</a>
			_____. 2021. Information, Planning and Consultation System (IPaC). Service Environmental Conservation Online System (ECOS). Accessed July 2021. Available online: <a href="http://ecos.fws.gov/ipac/">http://ecos.fws.gov/ipac/</a>
			Schmidly, D. J. and R. D. Bradley. 2016. The Mammals of Texas [online]. Seventh Edition. University of Texas Press. Accessed July 21, 2021. Available online: <a href="https://www.depts.ttu.edu/nsrl/mammals-of-texas-online-edition/">https://www.depts.ttu.edu/nsrl/mammals-of-texas-online-edition/</a>
			TPWD (Texas Parks and Wildlife Department). 2020. Updated List of State T & E Species in Texas - Effective March 30, 2020. TWPd, Austin, Texas. Accessed July 21, 2021. Available online: <a href="https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/nongame/listed-species/media/fedState-ListedSpeciesComplete-3302020.pdf">https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/nongame/listed-species/media/fedState-ListedSpeciesComplete-3302020.pdf</a>
			_____. 2021. Rare, Threatened, and Endangered Species of Texas. TWPd, Austin, Texas. Accessed July 2021. Available online: <a href="https://tpwd.texas.gov/gis/rtest/">https://tpwd.texas.gov/gis/rtest/</a>
			White, C. M., N. J. Clum, T. J. Cade, and W. G. Hunt. 2020. Peregrine Falcon ( <i>Falco peregrinus</i> ), Version 1.0. S. M. Billerman, ed. <i>In</i> : Birds of the World. Cornell Lab of Ornithology, Ithaca, New York. doi: 10.2173/bow.perfal.01.
Additional habitat data:			
			All About Birds. 2020. Bird Guide. Cornell Lab of Ornithology, Ithaca, New York. Accessed March 2020. Available online: <a href="https://www.allaboutbirds.org/guide/">https://www.allaboutbirds.org/guide/</a>
			eBird. 2020. eBird: An Online Database of Bird Distribution and Abundance. eBird, Cornell Lab of Ornithology, Ithaca, New York. Accessed April 2021. Available online: <a href="http://ebird.org/content/ebird/">http://ebird.org/content/ebird/</a>
			Frey, J. K., and F. McKibben. 2018. 2018 Year End Report. Distribution, Abundance, and Habitat Selection by the Penasco Least Chipmunk ( <i>Neotamias minimus atristriatus</i> ) 2018. Submitted to New Mexico Department of Game and Fish, share with Wildlife Program, Ecological and Environmental Planning Division. December 19, 2018. Available online: <a href="http://www.wildlife.state.nm.us/download/conservation/share-with-wildlife/reports/2018/Distribution-abundance-and-habitat-selection-by-the-Penasco-least-chipmunk-Tamias-minimus-atristriatus-revealed-by-N-mixture-models--Jennifer-Frey.pdf">http://www.wildlife.state.nm.us/download/conservation/share-with-wildlife/reports/2018/Distribution-abundance-and-habitat-selection-by-the-Penasco-least-chipmunk-Tamias-minimus-atristriatus-revealed-by-N-mixture-models--Jennifer-Frey.pdf</a>
			IUCN (International Union for the Conservation of Nature). 2020a. <i>Crotalus lepidus</i> . The IUCN Red List of Threatened Species. Version 2020-1. Information online: <a href="https://www.iucnredlist.org">https://www.iucnredlist.org</a> ; <a href="https://www.iucnredlist.org/species/64321/12767398#habitat-ecology">https://www.iucnredlist.org/species/64321/12767398#habitat-ecology</a>
			_____. 2020b. Mexican Blindcat ( <i>Prietelella phreatophila</i> ). The IUCN Red List of Threatened Species. Version 2020-1. Information online: <a href="https://www.iucnredlist.org">https://www.iucnredlist.org</a> ; <a href="https://www.iucnredlist.org/species/18136/1725896#habitat-ecology">https://www.iucnredlist.org/species/18136/1725896#habitat-ecology</a>
			NatureServe. 2020. NatureServe Explorer: An Online Guide to Species and Ecosystems. Accessed March 2020. Available online: <a href="https://explorer.natureserve.org/">https://explorer.natureserve.org/</a>
			New Mexico Natural Heritage Program. 2017. Arid Land Ribbonsnake. <i>Thamnophis proximus</i> . Available online: <a href="https://bison-m.org/booklet.aspx?SpeciesID=030385">https://bison-m.org/booklet.aspx?SpeciesID=030385</a>
			Service (U.S. Fish and Wildlife Service). 2013. Recovery Plan for the Black-Footed Ferret ( <i>Mustela nigripes</i> ). Service, Denver, Colorado. 157 pp. Available online: <a href="https://ecos.fws.gov/docs/recovery_plan/20131108%20BFF%202nd%20Rev.%20Final%20Recovery%20Plan.pdf">https://ecos.fws.gov/docs/recovery_plan/20131108%20BFF%202nd%20Rev.%20Final%20Recovery%20Plan.pdf</a>

**Table B-3. State-listed Wildlife Species with the Potential to Occur within the Plan Area for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie Chicken.**

Species Name	Federal Status	State Status	Habitat/Notes <sup>1</sup>
--------------	----------------	--------------	----------------------------

\_\_\_\_. 2014. Species Status Assessment Report. New Mexico Meadow Jumping Mouse (*Zapus hudsonius luteus*). Prepared by the Listing Review Team, Service, Albuquerque, New Mexico. May 27, 2014. Available online: <https://ecos.fws.gov/ServCat/DownloadFile/161605>

\_\_\_\_. 2020. Endangered and Threatened Wildlife and Plants; Threatened Species Status for Eastern Black Rail With a Section 4(d) Rule. 85 FR 196: 63764-63803. October 8, 2020.

**Attachment C. List of Preparers**

**LIST OF PREPARERS**

**U.S. Fish and Wildlife Service**

Michelle Durflinger EA Project Manager, EA Preparation and Review  
Southwest Regional Office

Marty Tuegel Supervisory Biologist/Technical and Policy Review  
Southwest Regional Office

Clay Nichols EA Preparation and Review  
Arlington Ecological Services Field Office

Joan D. Marsan EA Review  
Solicitor

**Western EcoSystems Technology, Inc.**

Janelle Rieland EA Project Manager, EA Preparation and Review

Joyce Pickle EA Review

Alaini Schneider Cossette EA Preparation

**Attachment D. References Cited**

## REFERENCES CITED

- Avian Power Line Interaction Committee (APLIC). Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C., and Sacramento, CA.
- \_\_\_\_\_. 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC, Washington DC.
- Bay, K., K. Nasman, W. Erickson, K. Taylor, and K. Kosciuch. 2016. Predicting Eagle Fatalities at Wind Facilities. *The Journal of Wildlife Management* 80(6); 1000-1010. doi: 10.1002/jwmg.21086.
- Bidwell, T (Ed). 2002. Ecology and Management of the Lesser Prairie-Chicken. Oklahoma Cooperative Extension Service, Division of Agricultural Sciences and Natural Resources, Oklahoma State University. E-970.
- California Department of Transportation. 2013. Technical Noise Supplement to the Traffic Noise Analysis Protocol. September 2013. Available online: <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf>.
- CEQ (Council on Environmental Quality). 1997. Considering Cumulative Effects under the National Environmental Policy Act. CEQ, Executive Office of the President, Washington, DC. January 1997.
- Colorado Parks and Wildlife. 2015. State Wildlife Action Plan, A Strategy for Conserving Wildlife in Colorado. Prepared for: The Citizens of Colorado and Its Visitors. Prepared by: Colorado Parks and Wildlife.
- ESRI (Environmental Systems Research Institute). 2019. World Imagery and Aerial Photos. World Topo. ArcGIS Resource Center. ESRI, producers of ArcGIS software. Redlands, California. Available online: <http://www.arcgis.com/home/webmap/viewer.html?useExisting=1>
- Evans, M. and Y. W. Li. 2017. Monitoring Habitat Loss for Endangered Species Using Satellite Data: A Case Study of the Lesser Prairie-Chicken. *Defenders of Wildlife*, Washington, DC. August 3, 2017. Available online: [https://defenders-cci.org/analysis/LPC\\_delisting/index.html](https://defenders-cci.org/analysis/LPC_delisting/index.html)
- Federal Aviation Administration. 2013. Environmental Prescreening Training Module 3 – Noise Review. Available online: [https://www.faa.gov/documentLibrary/media/Advisory\\_Circular/AC\\_91-36D.pdf](https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_91-36D.pdf)
- FERC (Federal Energy Regulatory Commission). 2013a. Upland Erosion Control, Revegetation, and Maintenance Plan. FERC, Office of Energy Projects. May 2013. Available online: <https://www.ferc.gov/sites/default/files/2020-04/upland-erosion-control-revegetation-maintenance-plan.pdf>
- \_\_\_\_\_. 2013b. Wetland and Waterbody Construction and Mitigation Procedures. FERC, Office of Energy Projects. May 2013. Available online: <https://www.ferc.gov/sites/default/files/2020-04/wetland-waterbody-construction-mitigation-procedures.pdf>
- \_\_\_\_\_. 2017. Guidance Manual for Environmental Report Preparation, for Applications Filed under the Natural Gas Act. Available online: <https://www.ferc.gov/sites/default/files/2020-04/guidance-manual-volume-1.pdf>

- Frey, J. K., and F. McKibben. 2018. 2018 Year End Report. Distribution, abundance, and habitat selection by the Penasco least chipmunk (*Neotamias minimus atristriatus*) 2018. Submitted to New Mexico Department of Game and Fish, share with Wildlife Program, Ecological and Environmental Planning Division. Submitted by Jennifer K. Frey and Fiona McKibben. December 19, 2018. Available online: <http://www.wildlife.state.nm.us/download/conservation/share-with-wildlife/reports/2018/Distribution-abundance-and-habitat-selection-by-the-Penasco-least-chipmunk-Tamias-minimus-atristriatus-revealed-by-N-mixture-models- -Jennifer-Frey.pdf>
- Katzner, T. E., D. M. Nelson, M. A. Braham, J. M. Doyle, N. B. Fernandez, A. E. Duerr, P. H. Bloom, M. C. Fitzpatrick, T. A. Miller, R. C. E. Culver, L. Braswell, and J. A. DeWoody. 2016. Golden Eagle Fatalities and the Continental-Scale Consequences of Local Wind-Energy Generation. *Conservation Biology* 31(2): 406-415. doi: 10.1111/cobi.12836.
- LPC Conservation LLC. 2021. Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan for the Lesser Prairie-Chicken Colorado, Kansas, New Mexico, Oklahoma, Texas. Draft April 2021.
- Manville, A. M. II . 2016. Impacts to birds and bats due to collisions and electrocutions from some tall structures in the United States: wires, towers, turbines, and solar arrays – state of the art in addressing the problems. In *Problematic Wildlife*, DOI 10.1007/978-3-319-22246-2\_20. Springer International Publishing Switzerland 2016.
- MidAmerican Energy Company. 2019. Final Habitat Conservation Plan: MidAmerican Energy Company Iowa Wind Energy Project Portfolio. MidAmerican Energy Company, Des Moines, Iowa. April 2019. 182 pp. + appendices and addendas. Available online: <https://www.fws.gov/midwest/rockisland/te/MidAmericanHCP.html>
- MRLC (Multi-Resolution Land Characteristics). 2019. National Land Cover Database (NLCD) 2016. MRLC Consortium. U.S. Geological Survey (GS) Earth Resources Observation and Science Center, MRLC Project, Sioux Falls, South Dakota. May 10, 2019. Available online: <https://www.mrlc.gov/data>
- Nasman, K., T. Rintz, D. Pham, and L. McDonald. 2020. Range-Wide Population Size of the Lesser Prairie-Chicken: 2012 to 2020. Prepared for Western Association of Fish and Wildlife Agencies. Prepared by Western EcoSystems Technology, Inc. (WEST), Fort Collins, Colorado. October 12, 2020. Available online: <https://wafwa.org/download/range-wide-population-size-of-the-lesser-prairie-chicken-2012-to-2020/?ind=1603459108986&filename=2020%20LEPC%20Range%20Wide%20Report%2012%20October%202020.pdf&wpdmdl=13483&refresh=5f92dcd057c181603460304>
- National Eagle Center. 2020. Golden Eagles. Available online: <https://www.nationaleaglecenter.org/golden-eagle-project/information-on-golden-eagles/>
- NatureServe Explorer. 2021. An Online Guide to Species and Ecosystems. Available online: <https://explorer.natureserve.org/>
- North American Datum. 1983. NAD83 Geodetic Datum.
- NREL (National Renewable Energy Laboratory). 2012. NREL Thinks Big at Wind Technology Center. March 22, 2012. Available online: <https://www.nrel.gov/news/features/2012/1814.html>
- Pagel, J. E., K. J. Kritz, B. A. Millsap, R. K. Murphy, E. L. Kershner, and S. Covington. 2013. Bald Eagle and Golden Eagle Mortalities at Wind Energy Facilities in the Contiguous United States. *Journal of Raptor Research* 47(3): 311-315.

- Rodrigues, V. B., F. M. Jesus, and R. I. Campos. Local Habitat Disturbance Increases Bird Nest Predation in the Brazilian Atlantic Rainforest. *Animal Biodiversity and Conservation* 2018: 117-120.
- Service (U.S. Fish and Wildlife Service). 1967. Office of the Secretary, Native Fish and Wildlife, Endangered Species. 32 Federal Register: 4001. March 11, 1967.
- \_\_\_\_\_. 1990. Northern aplomado falcon recovery plan. U.S. Fish and Wildlife Service. Albuquerque, New Mexico. 56pp. Available online: [https://ecos.fws.gov/docs/recovery\\_plan/northern%20aplomado%20falcon%20recovery%20plan%201990.pdf](https://ecos.fws.gov/docs/recovery_plan/northern%20aplomado%20falcon%20recovery%20plan%201990.pdf)
- \_\_\_\_\_. 2009. Eagle Permits; Take Necessary to Protect Interests in Particular Localities. Federal Register 74: 46836-46879. September 11, 2009. Available online: <https://www.federalregister.gov/documents/2009/09/11/E9-21589/eagle-permits-take-necessary-to-protect-interests-in-particular-localities>. Accessed November 20, 2019.
- \_\_\_\_\_. 2010. Species Assessment and Listing Priority Assignment Form: Lesser Prairie-Chicken (*Tympanuchus pallidicinctus*). April 2010. Available online: [http://www.privatelandownernetwork.org/pdfs/B0AZ\\_V01.pdf](http://www.privatelandownernetwork.org/pdfs/B0AZ_V01.pdf)
- \_\_\_\_\_. 2012. Final Land-Based Wind Energy Guidelines. March 23, 2012. 82 pp. Available online at: [http://www.fws.gov/cno/pdf/Energy/2012\\_Wind\\_Energy\\_Guidelines\\_final.pdf](http://www.fws.gov/cno/pdf/Energy/2012_Wind_Energy_Guidelines_final.pdf)
- \_\_\_\_\_. 2013a. Final 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. Service, Oklahoma Ecological Services Field Office, Tulsa, Oklahoma. January 10, 2013.
- \_\_\_\_\_. 2013b. Recovery plan for the black-footed ferret (*Mustela nigripes*). U.S. Fish and Wildlife Service, Denver, Colorado. 157 pp. Available online: [https://ecos.fws.gov/docs/recovery\\_plan/20131108%20BFF%20nd%20Rev.%20Final%20Recovery%20Plan.pdf](https://ecos.fws.gov/docs/recovery_plan/20131108%20BFF%20nd%20Rev.%20Final%20Recovery%20Plan.pdf)
- \_\_\_\_\_. 2014a. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Lesser Prairie-Chicken. 79 Federal Register (FR) 69: 19973-20071. Final Rule. 50 CFR Part 17. Department of the Interior Fish and Wildlife Service. 79 FR 19973. April 10, 2014.
- \_\_\_\_\_. 2014b. Guidelines for the Establishment, Management, and Operation of Permanent Lesser Prairie-Chicken Mitigation Lands. December 2014. 12 pp. + appendices. Available online: [https://www.fws.gov/southwest/es/Documents/R2ES/LPC\\_Guidelines\\_for\\_LPC\\_Mitigation\\_Lands\\_Dec2014.pdf](https://www.fws.gov/southwest/es/Documents/R2ES/LPC_Guidelines_for_LPC_Mitigation_Lands_Dec2014.pdf)
- \_\_\_\_\_. 2014c. Species Status Assessment Report. New Mexico Meadow Jumping Mouse (*Zapus hudsonius luteus*). Prepared by the Listing Review Team, U.S. Fish and Wildlife Service, Albuquerque, New Mexico. May 27, 2014. Available online: <https://ecos.fws.gov/ServCat/DownloadFile/161605>
- \_\_\_\_\_. 2016a. Bald and Golden Eagles: Population demographics and estimation of sustainable take in the United States, 2016 update. Division of Migratory Bird Management, Washington, DC. Available online: <https://www.fws.gov/migratorybirds/pdf/management/EagleRuleRevisions-StatusReport.pdf>
- \_\_\_\_\_. 2016b. Final Programmatic Environmental Impact Statement for the Eagle Rule Revision. United States Department of the Interior, Fish and Wildlife Service. December 2016.
- \_\_\_\_\_. 2018. Preble's Meadow Jumping Mouse Recovery Plan, Colorado. Region 6, Lakewood, Colorado. 148 pages. Available online: [https://ecos.fws.gov/docs/recovery\\_plan/Final\\_Draft\\_preblesrecoveryplan\\_10032018\\_signed.pdf](https://ecos.fws.gov/docs/recovery_plan/Final_Draft_preblesrecoveryplan_10032018_signed.pdf)

- \_\_\_\_\_. 2020. Final Report: Bald Eagle Population Size: 2020 Update. December 2020. U.S. Fish and Wildlife Service, Division of Migratory Bird Management, Washington, D.C. Available online: <https://www.fws.gov/migratorybirds/pdf/management/bald-eagle-population-size-2020.pdf>
- \_\_\_\_\_. 2021a. DRAFT Environmental Assessment for the Wind, Solar, Power Line, and Communication Tower Habitat Conservation Plan and Incidental Take Permit for the Lesser Prairie-Chicken. LPC Conservation LLC. Colorado, Kansas, New Mexico, Oklahoma, and Texas. U.S. Fish and Wildlife Service, Arlington Ecological Services Field Office, 2005 Northeast Green Oaks Boulevard, Suite 140 Arlington, Texas 76006. Available online: <https://www.federalregister.gov/documents/2021/04/14/2021-07475/application-for-an-incidental-take-permit-renewable-wind-and-solar-energy-power-line-and>
- \_\_\_\_\_. 2021b. Information, Planning and Consultation System (IPaC). Service Environmental Conservation Online System (ECOS). Accessed April 2021. Available online: <http://ecos.fws.gov/ipac/>
- \_\_\_\_\_. 2021c. Species Status Assessment Report for the Lesser Prairie-Chicken (*Tympanuchus pallidicinctus*). Version 2.2. 110 pp. + Appendicies.
- Sullins, D. S., D. A. Haukos, J. M. Lautenbach, J. D. Lautenbach, S. G. Robinson, M. B. Rice, B. K. Sandercock, J. D. Kraft, R. T. Plumb, and J. H. Reitz. 2019. Strategic Conservation for Lesser Prairie-Chickens among Landscapes of Varying Anthropogenic Influence. *Biological Conservation* 238: 108213.
- U.S. Census Bureau. 2018. American Community Survey Data. 2010-2018. Explore Census Data. Available online: <https://data.census.gov/cedsci/>
- \_\_\_\_\_. 2020. Urban and Rural. Available online: <https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural.html>
- USDA (U.S. Department of Agriculture). 2016. USDA Rural Development. Available online: <https://www.rd.usda.gov/files/1970o.doc>
- USDA Natural Resources Conservation Service (NRCS). 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. United States Department of Agriculture Handbook 296. Issued 2006. Available online: [https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs142p2\\_050898.pdf](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_050898.pdf)
- USEIA (US Energy Information Administration). 2020a. Annual Energy Outlook 2020 with Projections to 2050. January 29, 2020. US Department of Energy (DOE), Washington, D.C. Available online: <https://www.eia.gov/outlooks/aeo/pdf/AEO2020%20Full%20Report.pdf>
- \_\_\_\_\_. 2020b. Crude Oil Production. US Department of Energy (DOE), Washington, D.C. March 31, 2020. Accessed March 2020. Available online: [https://www.eia.gov/dnav/pet/pet\\_crd\\_crpdn\\_adc\\_mbbldpd\\_m.htm](https://www.eia.gov/dnav/pet/pet_crd_crpdn_adc_mbbldpd_m.htm)
- \_\_\_\_\_. 2020c. State Profiles and Energy Estimates (DOE). US Department of Energy, Washington, D.C. Accessed March 2020. Available online: [https://www.eia.gov/dnav/pet/pet\\_pnp\\_gp\\_dc\\_nus\\_mbbldpd\\_m.htm](https://www.eia.gov/dnav/pet/pet_pnp_gp_dc_nus_mbbldpd_m.htm)
- \_\_\_\_\_. 2020d. US Energy Mapping System. US Department of Energy (DOE), Washington, D.C. Accessed March 2020. Available online: <https://www.eia.gov/state/maps.php>
- USEPA (U.S. Environmental Protection Agency). 2013. Primary Distinguishing Characteristics of Level III Ecoregions of the Continental United States. Last updated September 2013.

- \_\_\_\_\_. 2017. Level III and Level IV Ecoregions of the Continental United States. Ecosystems Research, USEPA. Last updated February 8, 2017. Available online: <https://www.epa.gov/eco-research/level-iii-and-iv-ecoregions-continental-united-states>
- USFS (U.S. Forest Service). 2021. Monarch Butterfly Habitat Needs. USFS, Washington, Accessed July 2021. Available online: [https://www.fs.fed.us/wildflowers/pollinators/Monarch\\_Butterfly/habitat/](https://www.fs.fed.us/wildflowers/pollinators/Monarch_Butterfly/habitat/)
- Van Pelt, W. E., S. Kyle, J. Pitman, D. Klute, G. Beauprez, D. Schoeling, A. Janus, and J. Haufler. 2013. The Lesser Prairie-Chicken Range-Wide Conservation Plan. Western Association of Fish and Wildlife Agencies. Cheyenne, Wyoming. October 2013. 165 pp. + appendices. Available online: <https://www.wafwa.org/Documents%20and%20Settings/37/Site%20Documents/Initiatives/Lesser%20Prairie%20Chicken/2013LPCRWPfinalfor4drule12092013.pdf>
- Western Association of Fish and Wildlife Agencies. 2020. SGP CHAT (Southern Great Plains Crucial Habitat Assessment Tool, version 3.0). Available online: <http://wafwaprojects.maps.arcgis.com/apps/webappviewer/index.html?id=d16dac45cfba4abeab91c1df97370121>
- Yang, L., S. Jin, P. Danielson, C. Homer, L. Gass, S. M. Bender, A. Case, C. Costello, J. Dewitz, J. Fry, M. Funk, B. Granneman, G. C. Liknes, M. Rigge, and G. Xian. 2018. A New Generation of the United States National Land Cover Database: Requirements, Research Priorities, Design, and Implementation Strategies. ISPRS Journal of Photogrammetry and Remote Sensing 146: 108-123. doi: 10.1016/j.isprsjprs.2018.09.006.